

LLNL FY13 Site Sustainability Plan

Lawrence Livermore National Laboratory

December 5, 2012



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About the Cover

The front cover shows LLNL's comingled recycling program; the west entrance to the main site with drought tolerant planting, consistent with LLNL sustainable landscaping practices; and Sequoia, the world's fastest and most energy-efficient high performance computer.



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December 5, 2012

Approved by:

A handwritten signature in black ink, appearing to read 'Penrose C. Albright', written over a horizontal line.

Penrose C. Albright, Director
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List of Acronyms

AC	air conditioner
AFV	alternative fuel vehicle
APP	Affirmative Procurement Program
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ATI	Award Term Incentive
BART	Bay Area Rapid Transit
BTU	British thermal unit
CAMS	Center for Accelerator Mass Spectrometry
CARB	California Air Resources Board
CBFI	Capability Based Facilities and Infrastructure
CCS	Carbon Capture Sequestration
CES-21	California Energy Systems for the 21st Century Project
CD	critical decision
CDD	cooling degree days
CEDR	Consolidated Energy Data Report
CEM	Certified Energy Managers
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO ₂	carbon dioxide
CRAC	computer room air conditioners
CVP	Central Valley Project
D&D	decontamination and demolition
D&D Team	LLNL's Environmental Restoration Department Decontamination and Demolition Team
DC Pro	Data Center Energy Profiler
DDC	direct digital controls
DOE	U.S. Department of Energy
DOT	Department of Transportation
E85	ethanol fuel
EDC	Enterprise Data Center
EEB	energy efficiency building
EERE	energy efficiency and renewable energy
EISA	Energy Independence and Security Act
EMCS	Energy Management Control Systems
EMIP	Energy Modernization and Investment Program

EMP	Environmental Management Plan
EMS	Environmental Management System
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPACT	Energy Policy Act
EPEAT	Electronic Product Environmental Assessment Tool
EPP	Environmental Affirmative Procurement Program
ES&H	Environment, Safety and Health
ESPC	Energy Savings Performance Contract
FEMP	Federal Energy Management Program
FIMS	Facility Information Management System
FIRP	Facility and Infrastructure Recapitalization Program
FM	facility manager
FPOC	facility point of contact
FXR	flash x-ray
FY	fiscal year
GBCI	Green Building Certification Institute
GHG	greenhouse gas
GP	general provisions
GP	guiding principles
GPIC	Greater Philadelphia Innovation Cluster
GSA	General Services Administration
GSF	gross square foot
HEAF	High Explosives Applications Facility
HFC	hydrofluorocarbon
HPC	high performance computing
HPSB	high performance sustainable building
HVAC	heating, ventilating, and air conditioning
ICPT	Integrated Contractor Purchasing Team
IGPP	Institutional General Plant Projects
IFB	indistinguishable from background
ILA	industrial, landscaping, and agricultural
IPCC	Intergovernmental Panel on Climate Change
ISMS	Integrated Safety Management System

ISO	International Organization for Standardization
IT	information technology
kgals	one thousand gallons
kV	kilovolt
kW	kilowatt
kWh	kilowatt-hour
LBL	Lawrence Berkeley National Laboratory
lbs	pounds
LCW	low conductivity water
LED	light-emitting diode
LEED	Leadership in Energy and Environmental Design
LIFE	Laser Inertial Fusion Engine
LLNL	Lawrence Livermore National Laboratory
LLNS	Lawrence Livermore National Security, LLC
LSO	Livermore Site Office
LVOC	Livermore Valley Open Campus
MPS	Managed Print Services Program
MS4	Municipal Separate Storm Sewer Systems
MUSD	Maintenance and Utility Services Department
MW	megawatts
MWh	megawatt hours
NARAC	National Atmospheric Release Center
NEPA	National Environmental Policy Act
NIF	National Ignition Facility
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
O&B	Operations and Business Principal Directorate
OMB	Office of Management and Budget
P2	pollution prevention
PC	personal computer
PCMDI	Program for Climate Model Diagnosis and Inter-comparison
PFC	perfluorocompounds
PG&E	Pacific Gas & Electric
PPA	Power Purchase Agreement

PUE	power utilization effectiveness
PV	photovoltaic
R&D	research and development
REC	renewable energy credits
RFI	request for information
RFP	request for proposal
RGD	radiation generating device
ROI	return on investment
S&T	scientific and technical
SCM	LLNL Supply Chain Management Department
SF	square foot/feet
SF ₆	sulfur hexafluoride
SNL/CA	Sandia National Laboratories, California
Site 200	LLNL Main Livermore Site
Site 300	LLNL High-Explosives Experimental Test Site
SLAC	Stanford Linear Accelerator Center
SP	standard practice
SSP	Site Sustainability Plan
SSPP	DOE Strategic Sustainability Performance Plan
SWEIS	Site-Wide Environmental Impact Statement
SWPPP	Storm Water Pollution Prevention Plans
TSF	Terascale Simulation Facility
TYSP	Twenty-Five Year Site Plan
UCG	underground coal gasification
UQ	uncertainty quantification
USGBC	U.S. Green Building Council
VFD	variable frequency drives
VOC	volatile organic compound
WAPA	Western Area Power Administration
ZVI	zero valent iron



This document is presented as the Site Sustainability Plan for Lawrence Livermore National Laboratory (LLNL), consistent with the guidance provided by the Department of Energy (DOE) received on October 2, 2012, as a deliverable for the DOE Order 436.1 *Departmental Sustainability* requirement.

Overview of the Lawrence Livermore National Laboratory

LLNL is a DOE Laboratory dedicated to advancing science and engineering to enhance the Nation's security and other important research endeavors. LLNL's mission—to advance and apply science and technology for the benefit of the nation—specifically aims to ensure the safety, security, and reliability of the U.S. nuclear deterrent; reduce or counter threats to national and global security; enhance the energy and environmental security of the nation; and strengthen the nation's economic competitiveness.

LLNL's vision, to “push the frontiers of knowledge to build the scientific and technological foundation that will be needed to address the national security issues of the future,” aligns with the nation's vision for a sustainable future. LLNL has a long history of applying science and technological solutions to the toughest and most important problems affecting national and global security and is recognized for its excellence in business and operations, as well as for its responsible stewardship of the resources entrusted to us. LLNL has long engaged in the practice of sustainability, which is integral to the Laboratory's mission, and the mission is vital to the Nation's sustainable future.

LLNL is certified in environmental management (ISO 14001) and occupational health and safety management (ISO 18001), and is in the process of achieving quality management certification (ISO 9001).

Site Management Vision

LLNL's vision for site sustainability is to supply its programs with optimal conditions for success, while undergoing continual improvement to existing energy infrastructure; to collaborate with growing mission areas to identify ways to innovate towards more energy efficient solutions for energy-intensive facilities; to pursue innovative renewable energy generation, both for on-site use and as an ongoing research area; and to incorporate energy efficiency improvements into the ongoing energy management and facility operations of LLNL.

Major Planning Assumptions and Issues

LLNL is planning for growth in mission-based facilities in the upcoming decade. The Laboratory will be addressing the decontamination and demolition of legacy facilities which will allow for new and more energy efficient facilities to be built. LLNL's strategic goal is to lead the nation in stockpile science, innovation and sustainment, be the foremost national security laboratory, anticipating, innovating and delivering solutions for the nation's most challenging security problems, and be the premier destination for the nation's very best scientists and engineers.

These goals will require revitalization of LLNL facilities and infrastructure. Both employee commuting and wastewater emissions are directly related to the size of the LLNL workforce, which is projected to hold steady in the near future, directly affects LLNL's greenhouse gas (GHG) emissions.

Approaches to Site Management

The Laboratory strives to be a leader in responsible environmental stewardship and sustainability. LLNL has made the sustainable operations of the campus and facilities a priority. In FY12, the *2012 LLNL Multi-Year Site Sustainability Investment Proposal* was submitted to the LLNL Director. This plan, if implemented at an estimated cost of \$110M, would allow LLNL to meet all the goals stated in this Sustainability Plan, and be a Sustainability leader in the DOE complex.

LLNL incorporates sustainability and environmental management into the planning and performance of day-to-day operations and non-routine activities. The Environmental Management System (EMS) provides a framework for integrating environmental considerations into daily work processes, based on an international standard (ISO 14001), to guide efforts to achieve this goal and continually improve environmental performance. EMS is comprised of four main elements: an environmental policy; planning; implementation; and review and improvement.

The Laboratory employs two full-time systems engineers to help ensure that facilities are operated at the most efficient way practicable, while still providing all necessary mission capabilities to researchers and scientists. Wherever direct digital controllers (DDC) systems are installed, existing resources are used to ensure the night and weekend setback feature is incorporated.

Facility managers (FMs) have also worked to reprogram thermostats on packaged HVAC systems so they will shut off at night and on weekends. FMs are also working to ensure that installed lighting controllers function as designed, and that lights are off in unoccupied offices and conference rooms.

Using engineering, research, and facility staff, LLNL will continue to identify methods to reduce greenhouse gases, focusing first on sulfur hexafluoride (SF₆) emissions in utility components and accelerators. LLNL is dedicated to developing "green" buildings; four buildings are currently Leadership in Energy and Environmental Design (LEED) certified with one new building in the certification process. An additional nine buildings have met the guiding principles for the federal High Performance Sustainable Buildings (HPSB) guidelines. As new facilities are constructed, they will meet the HPSB or LEED Gold requirements.

Funding Strategies

New and existing resources will be leveraged as much as possible in order to achieve LLNL's sustainability goals. The Facility and Infrastructure Recapitalization Program (FIRP) sunsets in early FY13. Since its inception, the FIRP has replaced equipment with the most energy efficient equipment on the market.

A new NNSA program, Capability Based Facilities and Infrastructure (CBFI), will provide life-extension projects for enduring facilities and infrastructure such as metering, boiler and chiller improvements, and heating, ventilation, and air conditioning systems. These will be replaced with energy- and water-efficient projects as practical.

Indirect funding will be used to replace aged equipment as funding becomes available (\$5M in FY13). In FY13, LLNL plans to replace several air handlers and will install energy-efficient motors in Buildings 111, 131 and 543. The Laboratory is replacing older boilers with high efficiency, condensing models in Buildings 121, 551W and 695, and will rebuild several chillers in FY13 that will allow maximum operational efficiency.

Indirect funding will also be used to fund Energy Independence and Security Act (EISA) evaluations and improvements, HPSB and LEED evaluations and perform other sustainability projects.

The *2012 LLNL Multi-Year Site Sustainability Investment Proposal* provides the framework for LLNL to meet the goals stated in this Site Sustainability Plan. The projects listed in the subsequent sections list funding requested in the *2012 LLNL Multi-Year Site Sustainability Investment Proposal*.

Successes and Challenges

LLNL had a number of successes and challenges in FY12. The successes in site sustainability are manifold, and are outlined in this document. Some highlights include:

- Earning an NNSA Best-In-Class award for the “Livermore Valley Open Campus (LVOC) High Performance Computing Innovation Center: LLNL Program and Facility Development with the Environment in Mind.”
- Earning NNSA environmental stewardship awards for two joint LLNL-Sandia California (SNL/CA) projects: “Fresh @ the Labs — an LLNL-SNL/CA Farmers Market Collaboration,” and the “LLNL-SNL/CA Hydrogen Shuttle Bus Collaborative Project.”
- Earning an NNSA environmental stewardship award for “Innovative Green Cleaning.”
- LLNL was among the first DOE sites to earn a DOE 2012 Green Buy Gold level award for “Sustainable Acquisition Practices.”
- Expanding a comingled recycling and composting pilot program in fifteen buildings, including all onsite cafeterias.
- Sequoia, has earned the title of the world’s most efficient supercomputer from the Green500.
- Continuing to lead a robust scientific and research program that advances renewable energy research, building energy efficiency, climate change research, and GHG mitigation.
- Working with the DOE Livermore Site Office (LSO) on a solar renewable energy project that will be located on ten acres in the northwest quadrant of the main site. Bids from external contractors are due January 2013.

The self-assessment for the Performance Evaluation Plan for sustainability and Sustainability Management Award Term Initiative (ATI) was submitted, and final rating is pending.

Energy Challenges

LLNL is facing three ongoing energy issues. The first is that LLNL is poised to grow in mission areas that are particularly energy-intensive, such as high performance computing (HPC) and the National Ignition Facility (NIF). This is an indication of the success of the Lab’s efforts in research and technology development. Programs such as these will impact LLNL’s greenhouse gas (GHG) emissions and potable water intensity. This will be the case even as new computing centers and prospective new facilities are designed and built to be as efficient as possible.

The second issue is that of aging facilities. LLNL has consistently replaced and upgraded equipment with the most efficient and cost-effective replacements.

Lastly, it is very difficult to overcome LLNL’s low cost of delivered electricity (~\$0.05 per kWh) to justify significant investments in future energy conservation projects. A number of low-cost energy saving initiatives have been identified from the Energy Savings Performance Contract (ESPC) contractor and internally funded facility audits, yet these will not make a significant impact in the Laboratory’s overall energy consumption or energy intensity.

Summary Table of Goal Targets

SSPP Goal #	DOE Goal	Performance Status	Planned Actions & Contribution	Risk of Non-Attainment
1.1	28% Scope 1 & 2 GHG reduction by FY20 from a FY08 baseline	LLNL continues on target to meet FY20 goals with reduced energy intensity and fugitive emissions reductions. In FY12, LLNL achieved a reduction of more than 20% in Scope 1 & 2 GHG emissions, relative to its FY08 baseline.	LLNL will aggressively continue to pursue GHG reduction efforts through continued management of fugitive emissions from equipment using SF ₆ . Efforts will continue to manage gas and electric consumption through energy efficiency projects.	High
1.2	13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline	In FY12, according to the LLNL GHG inventory, the Laboratory achieved a reduction of more than 15% in Scope 3 emissions from the FY08 baseline this is a small increase over FY11, but remains consistent with the goals set by DOE for 2020.	LLNL Scope 3 emissions reductions will continue to focus on employee commuting and travel.	Low
GOAL 2: Buildings, ESPC Initiative Schedule, and Regional & Local Planning				
2.1	30% energy intensity (BTU per gross square foot) reduction by FY 2015 from a FY 2003 baseline	LLNL reduced its energy intensity relative to the FY03 baseline by 14.14% in FY12.	Additional resources are needed to meet the FY15 goal.	High
2.2	EISA Section 432 energy and water evaluations	LLNL is on track to start the second round of facility evaluations.	Additional resources are needed to execute recommended projects.	Medium
2.3	Individual buildings metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015).	LLNL achieved 90% of advanced metering for electricity and 52% for natural gas in FY12.	LLNL met the 90% goal for advanced metering of electricity and is on track to meet the natural gas goal by the end of FY15.	Low

SSPP Goal #	DOE Goal	Performance Status	Planned Actions & Contribution	Risk of Non-Attainment
2.4	Cool roofs, unless uneconomical, for roof replacements unless project already has CD-2 approval. New roofs must have thermal resistance of at least R-30.	In FY12, cool roofs were installed in buildings 1727, 291, 423, 517, 801D and 801A sections K and L.	All roof replacements and new roofs at LLNL will be cool roof installations. Additional roofs are being designed for FY13 replacement.	Low
2.5	15% of existing buildings greater than 5,000 gross square feet (GSF) are compliant with the Guiding Principles (GPs) of HPSB by FY 2015.	Task of assessing/certifying 15% of the number of existing building greater than 5,000 GSF is 59% complete.	Four additional HPSB Assessments and one LEED certification effort are planned.	Low
2.6	All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the GPs.	HPSB certification process for one new construction project is underway.	New facilities greater than 5,000 GSF will be LEED Gold Certified or HPSB compliant.	Low
2.7	7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter.	FY12 requirement was met by the purchase of 33,799 MWh RECs through the Western Area Power Administration (WAPA).	The FY13 requirement will be met through REC purchases as well. A 2-4 MW solar project is in development, led by LSO.	Low
GOAL 3: Fleet Management				
3.1	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to a FY 2005 baseline.	FY12 alternative fuel consumption increased 3.5% compared to FY11. Overall increase compared to the FY05 baseline is 255%.	LLNL will maintain its alternative fuel vehicle (AFV) fleet and continue to replace the existing fleet with E85 vehicles.	Low
3.2	2% annual reduction in fleet petroleum consumption by FY 2020 relative to a FY 2005 baseline.	In FY12, LLNL's petroleum fuel consumption decreased 14%, compared to FY11, and decreased 67% from the FY05 baseline. LLNL well exceeds the required annual 2% reduction and the cumulative 30% through the end of FY20.	LLNL will continue to strengthen its alternative fuel infrastructure by replacing conventional fueled vehicles with alternative fueled vehicles and by promoting the use of alternative fuels.	Low

SSPP Goal #	DOE Goal	Performance Status	Planned Actions & Contribution	Risk of Non-Attainment
3.3	100% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 2015 and thereafter (75% FY 2000 – 2015). ⁵	LLNL met and exceeded the required 75% replacement of fossil fuel light-duty vehicles with AFVs in FY11. A total of 84 light-duty vehicles were scheduled to be replaced in FY12; all 84 vehicles were replaced with E85 vehicles.	LLNL will continue replacing its fleet with AFVs as manufacturers make them available and exploring different alternative fueled vehicle options, specifically in the area of electric vehicles.	Low
3.4	Reduce fleet inventory of non-mission critical vehicles by 35% by FY 2013 relative to a FY 2005 baseline.	Goal 3.4 is not consistent with NNSA-HQ Fleet Management Directives. LLNL will conduct a Vehicle Allocation Methodology (VAM) for determining the optimum fleet inventory.	The FY13 goal will target a 10% reduction in the light duty vehicle fleet.	High
GOAL 4: Water Use Efficiency and Management				
4.1	26% potable water intensity (Gal per gross square foot) reduction by FY 2020 from a FY 2007 baseline.	LLNL reduced its water intensity relative to the FY07 baseline by 3.30% in FY12.	LLNL will need more water savings measures and resources to meet FY15 and FY20 goals.	High
4.2	20% water consumption (Gal) reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline.	LLNL uses potable water for ILA (non-potable water is not used for ILA).	LLNL is investigating multiple strategies for reducing potable water used for ILA including using reclaimed water and xerophytic landscaping.	N/A
GOAL 5: Pollution Prevention and Waste Reduction				
5.1	Divert at least 50% of non-hazardous solid waste, excluding construction and demolition debris, by FY 2015.	LLNL consistently meets or exceeds this goal. In FY12, LLNL diverted 68% of non-hazardous solid waste.	LLNL continues to identify new potential waste streams for diversion. Continued expansion of the composting and comingled recycling is anticipated for FY13.	Low
5.2	Divert at least 50% of construction and demolition materials and debris by FY 2015.	LLNL consistently meets or exceeds this goal.	Improved tracking of construction and demolition materials and debris continues for FY13.	Low

SSPP Goal #	DOE Goal	Performance Status	Planned Actions & Contribution	Risk of Non-Attainment
GOAL 6: Sustainable Acquisition				
6.1	Procurements meet requirements by including necessary provisions and clauses (Sustainable Procurements/Biobased Procurements).	Sustainable Acquisition or Environmental Affirmative Procurement Program (EPP) clauses have been incorporated into all LLNL General Provisions (GPs) for purchase orders and subcontracts, except for the Standard Research General Provisions. 99% of LLNL purchase orders and subcontracts that incorporate General Provisions meet Sustainability requirements and include a sustainable acquisition cause.	LLNL will ensure the Sustainable Acquisition or Environmental Affirmative Procurement Program clauses as identified in the General Provisions are included in all purchase orders and subcontracts. LLNL will continue to implement, review and update Procurement Standard Practice (SP) 23.5, Environmental Affirmative Procurement and Waste Reduction Requirements as it applies to LLNL procurement activities.	Low
GOAL 7: Electronic Stewardship and Data Centers				
7.1	All data centers are metered to measure a monthly Power Utilization Effectiveness (PUE) of 100% by FY 2015.	LLNL has identified 58 data centers that meet the criteria to be classified as data centers that are to be metered by FY 2015.	Only 3% of these data centers have a means of measuring PUE monthly through metering, the remaining have a calculated PUE. Rather than metering all 58 centers, LLNL proposes to focus on consolidation efforts across the site, then meter projects on remaining enduring data centers.	High

SSPP Goal #	DOE Goal	Performance Status	Planned Actions & Contribution	Risk of Non-Attainment
7.2	Maximum annual weighted average PUE of 1.4 by FY 2015.	The two primary objectives of electronic stewardship are server consolidation and server virtualization. LLNL continues to collocate services into the Building 112 Enterprise Data Center (EDC).	The goal for FY13 to FY15 is to continue consolidation in Building 112 to improve PUE; this requires resource commitment.	High
7.3	Electronic Stewardship - 100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012.	100% of eligible PCs, laptops, and monitors are implemented with power management functionality; monitors are powered off after 30 minutes idle time, PCs and laptops are put into "stand-by" mode after 30 minutes of idle time.	FY13 plans include continuing desktop refresh program and continuing Desktop Power Management Project.	Low
GOAL 8: Innovation & Government-Wide Support				
8.0	Innovation & Government-Wide support	Site specific objectives: <ul style="list-style-type: none"> • Improve collaboration between scientific and technical (S&T) staff and operations to improve lab energy efficiency. • Continue to identify opportunities to leverage scientific staff. • Use site data streams as test cases for scientific projects. 		

2.0 Performance Review and Plan Narrative

SSPP Goal 1.1

28% Scope 1 & 2 GHG reduction by FY20 from a FY08 baseline

LLNL's GHG footprint is defined by the three major scopes of GHG emissions. LLNL quantifies emissions within each scope, as well as targets reductions according to scope-related reduction goals. These are depicted in Figure 2-1. LLNL owns or controls sources from all three direct GHG emissions. LLNL's Scope 1 emissions result primarily from the following types of activities:

- Fuel combustion for the generation of electricity, heat, cooling, or steam (e.g., boilers, furnaces, and emergency generators)
- Mobile source agency controlled emissions that result from the combustion of fuels in mobile combustion sources including LLNL's General Services Administration (GSA)-leased vehicles, commercially leased, and agency-owned vehicles, and the emissions from biofuel combustion

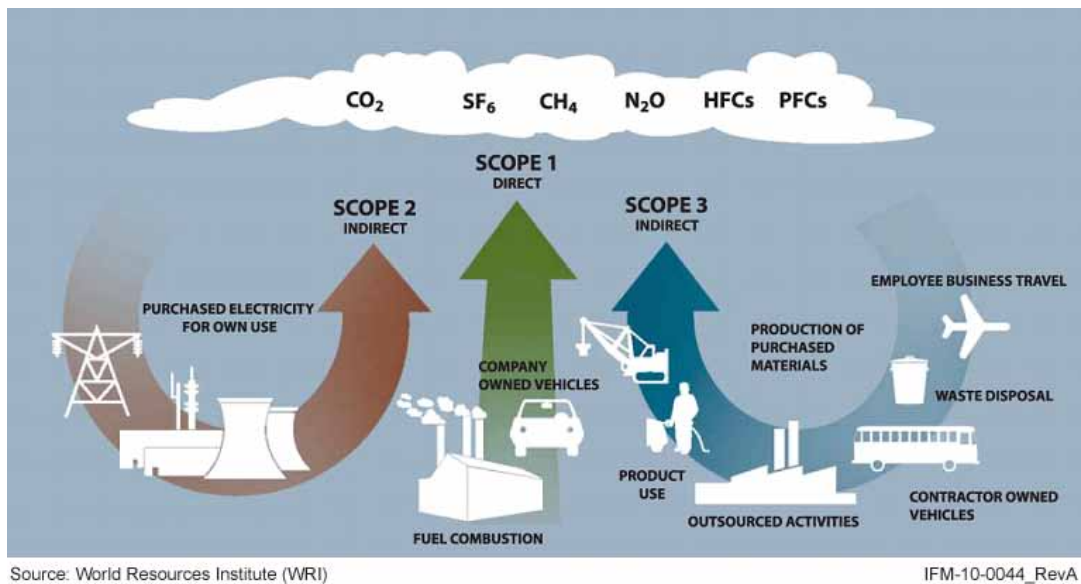


Figure 2-1. The three major scopes of GHG emissions.

- Fugitive emissions from intentional or unintentional releases of GHGs from within LLNL's organizational boundary
 - Equipment leaks from joints, seals, packing, and gaskets (SF₆)
 - Operation of the sewage lagoon at Site 300
 - Pure gases releases, such as carbon dioxide (CO₂), SF₆, and methane
 - Hydrofluorocarbon (HFC)/perfluorocompounds (PFC) emissions from the use of refrigeration and air conditioning equipment
 - Methane leaks from gas transport

LLNL's Scope 2 emissions are a result of indirect emissions associated with consumption of purchased or acquired electricity. All other potential Scope 2 emissions are not applicable to LLNL.

LLNL is committed to continuing to assist DOE in working to achieve its 28% GHG reduction goals. LLNL's Site 200 and Site 300 reduction in major sources of Scope 1 and Scope 2 GHGs are implicitly influenced by the management of natural gas, fossil fuels, electricity, and fugitive emissions (SF₆ and others).

Scope 1 and 2 successes continue to be embedded in the activities and accomplishments discussed throughout this document, including:

- Energy intensity reduction
- Renewable energy consumption
- Reducing fleet petroleum use
- Metering
- Cool roofs
- Pollution prevention and waste reduction
- Sustainable acquisition and electronic stewardship

Overall Reduction of Scope 1 & 2 Greenhouse Gas Emissions

DOE's goals include a 28% reduction in the generation of Scope 1 & 2 GHG emissions by FY20 from the FY08 baseline. LLNL's GHG reductions for Scope 1 & 2 are driven by the plans described in this document. LLNL FY12 goals of a 5.6% reduction in Scopes 1 & 2 were surpassed. LLNL was successful in reducing GHG by more than 20% of the FY08 baseline emissions (this will be revised based on the final inventory). As can be seen by the FY12 inventory utilization of electricity, natural gas and SF₆ continue to be the major contributors to LLNL's GHG Scope 1 & 2 emissions. As illustrated in this plan, LLNL has had many successes in the management and reduction of SF₆ and gas utilization.

Performance Status

In FY12, LLNL achieved a reduction of more than 20% in Scope 1 & 2 GHG emissions, relative to its FY08 baseline. As detailed in this section, the progress in Scope 1 & 2 GHG emissions reduction is due in large part to the increased management of SF₆ emissions. Other contributions include the installation of cool roofs, the thermostat setback initiative, fleet management, and awareness of natural gas usage.

Plans and Projected Performance

LLNL will aggressively continue to pursue GHG reduction efforts through continued management of fugitive emissions from equipment using SF₆.

The measures described in this document all have the potential to assist in GHG emission reductions, and they will be carried out if deemed economically feasible and supportive of mission. Future growth of LLNL continues to be centered on energy-intensive facilities and research, including the NIF, HPC, and other program-related areas, all of which will increase LLNL's GHG emissions. It should be noted that though LLNL may be successful with the reductions in energy intensity, this does not necessarily translate into overall GHG reductions. Because the majority of performance and planned actions are discussed extensively in this report, this section will focus on SF₆.

SF₆ Reduction

SF₆ has been in use at LLNL for many years, both in electric power distribution and with experimental activities such as accelerators. SF₆ has traditionally played a large role in the electrical industry as a dielectric medium, especially after the industry moved away from oil filled equipment due to the health effects associated with polychlorinated biphenyls. The dielectric properties made SF₆ the industry standard and allowed for the size of electrical equipment to be greatly reduced. In addition to its use as a dielectric medium, SF₆ has also been used as a tracer gas for air dispersion modeling, an etchant in semiconductor manufacturing, and miscellaneous other uses.

According to the Intergovernmental Panel on Climate Change, SF₆ is the most potent greenhouse gas evaluated; it is estimated that SF₆ is over 23,000 times more potent than CO₂. While its overall contribution to global warming has been estimated to be less than 0.2% due to the proportion of SF₆ emitted compared to gases such as CO₂, methane and ozone, it remains a concern due to the fact that concentrations of SF₆ in the atmosphere have risen by about 7% per year in the 1980s and 1990s. SF₆ is also persistent in the atmosphere, with a lifetime of 3,200 years.

Because of its high CO₂ equivalent value and its relatively narrow range of applications, SF₆ use has been specifically targeted. In addition to the DOE focus, the State of California has also implemented regulations through the California Air Resources Board (CARB) to manage SF₆ use.

SF₆ use at LLNL falls largely under three categories:

- 1) electric power production and distribution,
- 2) small-scale research and development (R&D) applications, and
- 3) as a dielectric medium used in accelerators.

LLNL's use, inventory, and purchase data in FY12 has remained relatively stable when compared to FY11, although it is important to note that many improvements to the SF₆ management program have taken place and are expected to be implemented in the future.

Electrical Use

In the electrical power distribution and distribution field, SF₆ is used primarily as a dielectric gas in equipment. Small amounts are used in the 87 sectionalizing switches located throughout the LLNL Site 200 and in two circuit breakers at Site 300. The gas is contained within the breakers in sealed reservoirs and is not released during normal operations. Another use of SF₆ is with the main 115 kV switchgear located at Building 424.

Small-scale R&D Use

SF₆ is used in a variety of projects, most of which are relatively small-scale. These small-scale projects typically require less than a standard 115-pound cylinder, and usually less than a "lecture" bottle (5 pounds). However, a few of the uses that fall under this category use considerable more gas. The largest uses that fall under this subset are experiments that require a dielectric medium for power supplies/capacitors (i.e., flash x-ray units) and in the development of etching technologies.

Accelerators

There are currently two large accelerators operating at LLNL that use a significant amount of SF₆ as an insulating gas in vessels which house the accelerator components. In Building 235, approximately 850 cubic feet of gas is used. The Center for Accelerator Mass Spectrometry (CAMS) accelerator, housed in B190, uses close to 4,000 cubic feet, representing the largest single use of SF₆ on-site. In addition to these two accelerators, there are two smaller accelerators within CAMS that combined use approximately 186 cubic feet, also as a dielectric gas.

There is no change in the status of the accelerator in Building 194. Funding has not been identified to allow for the resumption of operations employing the Pelletron® accelerator that would use approximately 2,500 cubic feet.

LLNL Inventory

There are approximately 26 distinct uses of SF₆ at LLNL, which is several more than what was reported in the FY12 SSP. The increase can be attributed to increased efforts with project identification and the addition of several new efforts.

Information obtained from Chemtrack, LLNL's chemical inventory database, shows that there are 147 individual SF₆ containers tracked on-site. This is a reduction from the number of containers reported in the FY12 SSP. This reduction is largely a result of a dedicated effort that focused on managing legacy, unwanted gas cylinders that were returned to vendors. This suggests that the number of containers is remaining relatively stable, and the implementation of the LLNL SF₆ Management and Capture Plan (LLNL-AR-483031-REV-1) is helping to identify all sources of SF₆ on-site. Due to the rising cost of gas, and the perception that it may be difficult to obtain in the future, the large users on-site have continued to assume responsibility for containers that previously were not needed for any particular activity and are of a sufficient grade/purity for their operations.

Chemtrack currently captures SF₆ containers purchased (i.e., gas cylinders), not usage, in select experimental apparatus with the notable exception of the main accelerator tank in Building 190 which, at 13,000 lbs., represents nearly half of the LLNL tracked inventory. The information presented in Figure 2-2 accounts for the Chemtrack volume as well as volumes in use as identified in project description documents.

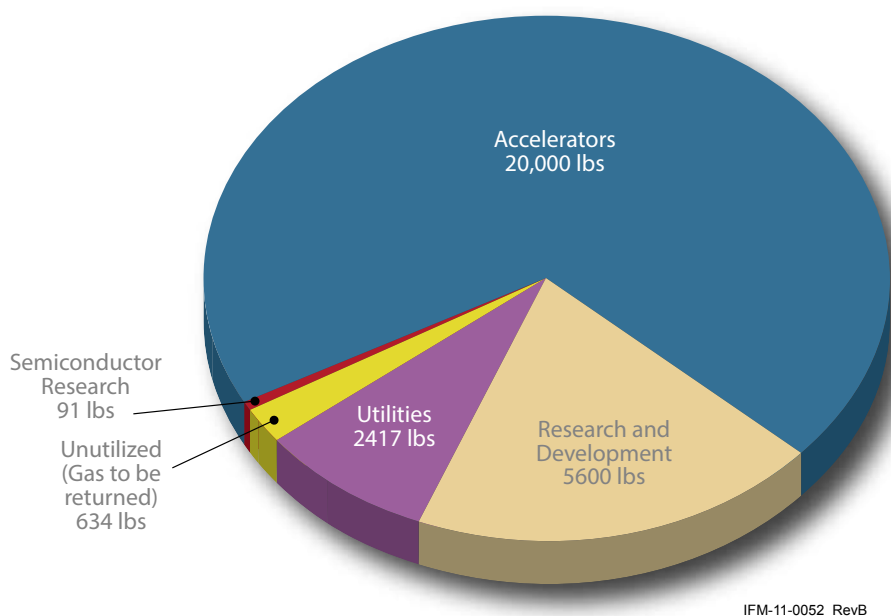


Figure 2-2. SF₆ volume by major use.

The majority of the volume listed for accelerators consists of the gas actually located within the accelerator vessels. However, a large volume (approximately 3,000 lbs.) is located in cylinders that may be needed to restart accelerator operations in Building 194. If utilized, this does not mean that the SF₆ will be released into the atmosphere, but rather would be used to provide the initial stocking of the system. Similarly, two thirds of the volume listed for utilities is located within the electrical equipment. This trend does not carry over to the R&D activities where the amount recorded is largely what is stored in the cylinders.

Program Improvements

In October 2012, the LLNL SF₆ Management and Capture Plan (LLNL-AR-483031-REV-1) was updated. The plan is intended to document ongoing SF₆ use, describe current and future efforts to minimize emissions to the extent practical, and provide the basic framework for how LLNL plans to manage SF₆ operations with reduction goals in mind (Figure 2-3).

Over the last several years, LLNL has significantly raised the awareness on environmental issues with the continued use of SF₆. This has resulted in SF₆ being a major component of an Environmental Management Plan (EMP) under LLNL's Environmental Management System. In FY11, LLNL's goal was to achieve a measurable reduction in SF₆ loss during equipment maintenance. In addition, each LLNL program committed to documenting their significant SF₆ uses. In FY12, the environmental management plan included specific and focused reviews of existing projects using SF₆, establishing institutional controls on the ordering and inventory management of SF₆, as well as continuing to define the scope of use at LLNL. EMP efforts for FY13 will include continuing to educate SF₆ custodians and to document controls in work control packages.

Plans and Projected Performance

The largest effort to be undertaken by LLNL in FY13 is to roll out the program elements identified in the SF₆ Management and Capture Plan. While some elements were developed concurrently (such as the inclusion of SF₆ in the Controlled Items and Services List), other items represent new practices that will require an implementation plan. These efforts include developing a process to weigh cylinders coming in and going out of LLNL, incorporating SF₆ control language into work control documents, and communicating SF₆ program requirements to all LLNL users.

Efforts to be taken in FY13 to support the regulatory reporting efforts will include maintaining documentation on R&D uses and reporting emission data from the electrical utility usage. Ongoing efforts are required to complete the process of dispositioning the remaining unneeded containers of SF₆.

Electrical

LLNL expects the efforts already taken by its Maintenance and Utility Services Department (MUSD) will greatly minimize the amount of SF₆ that may be released as a result of electrical power distribution operations. Ongoing maintenance on switches and breakers will help keep the gas reservoirs intact, or at least allow maintenance personnel to more quickly identify a drop in pressure. These efforts are expected to be sufficient to meet the California SF₆ emission reduction requirements for electrical equipment. In addition, new switchgear purchases are being evaluated that would use SF₆ alternatives. The CARB reporting effort will be used as the tool to determine the effectiveness of these efforts.

Small Scale R&D

SF₆ inventories dedicated for miscellaneous R&D activities will be monitored to determine the amount of SF₆ being used. Researchers responsible for these projects will be asked to consider SF₆ alternatives and provide a reasonable justification for why alternatives are not feasible. Any existing or new use that involves the release of SF₆ gas will be evaluated to determine if a capture/recovery system can be employed. All R&D users of SF₆ will be required by the CARB to keep records of their SF₆ processes and emissions, including measures taken to minimize emissions.

Operations at the Site 300 Flash X-Ray (FXR) project continue to be reviewed for possible improvements. Improvements made by the program with respect to this project have been recognized with a 2011 NNSA Environmental Stewardship award and was one of only 15 DOE EStar awards chosen for 2011. Improvements include:

- installation of gas scrubbers to extend SF₆ life;
- purchase of a portable reclamation system to capture residual SF₆ that is contained in the system's hoses during maintenance; and
- utilization of electronic scales and more formal reporting methods to improve inventory management.

These improvements resulted in the reduction of SF₆ emissions from an estimated 5,000 lbs. prior to 1997 to less than 115 lbs. today. An evaluation was performed in 2012 on various systems associated with FXR maintenance that may lead to additional emission reductions.

One notable achievement in the area of R&D applications is the modifications of several radiation generating devices (RGDs) in the High Explosives Application Facility (HEAF) to allow for the use of Ultra Pure air rather than SF₆ as a dielectric material. In addition, HEAF has developed a process for the strict management of their SF₆ management that includes control of the stock on hand and a use tracking mechanism.

Finally, several R&D projects were proposed that originally called for the use of SF₆. In part due to the raised awareness of SF₆ at LLNL and the incorporation of SF₆ considerations into the hazard identification process of LLNL's work control system, the projects were modified to either not use SF₆ or utilize a substitute (i.e., CF₃I).

Accelerators

As funding and resources allow, CAMS will continue to replace older valves on a prioritized schedule. The newly purchased gas recovery cart will be utilized at the two small accelerators during all maintenance operations where gas transfer has to occur. The halogen sniffers will continue to be used in a more formalized manner during transfer operations to detect any possible leaks as early as possible. The accelerator in Building 235 will continue to utilize an efficient gas transfer system during the infrequent maintenance operations, and weekly monitoring of the system will continue to ensure that the system is intact during normal operations. If funded, the Building 194 proposed use will be constructed with more up-to-date standards, but use the same basic system as the Building 235 accelerator.

Resources Required

LLNL will continue to work on documenting SF₆ uses on-site. This will include smaller projects as well as revising, as necessary, the documentation for large projects that may have changed. Continued management attention is necessary to document the volume of gas in programmatic equipment, but not tracked via Chemtrack. This is needed in order to develop a more accurate inventory of SF₆ at LLNL.

Information on SF₆ controls needs to be entered into relevant work control documents. This will require effort on the part of program personnel, as well as Environment, Safety and Health (ES&H) professionals who review and concur on documentation.

As the LLNL SF₆ management program becomes more developed, the number of projects where alternatives to SF₆ can be used becomes smaller. However, the remaining uses, specifically those in the high-voltage applications and accelerators, are typically characterized by robust containment and transfer systems and are contained in systems that can detect significant releases fairly quickly.

While the major users of SF₆ will not be able to eliminate the use of SF₆ in the near future, program management and researchers need to continue to ensure that the gas is used in a manner that minimizes the amount released.

SSPP Goal 1.2

13% Scope 3 GHG reduction by FY20 from a FY08 baseline

Scope 3 includes all indirect emissions not included in Scopes 1 and 2. Scope 3 is an evolving area of GHG accounting, and recent and accepted methods for calculating emissions are also evolving. As new methodologies and procedures are developed, they will be included in the requirements for the inventory process. Examples of these areas include operations associated with leased space, vendors, contractors, and supply chain.

DOE's goal is a 13% reduction in the generation of Scope 3 GHG emissions. The sources of Scope 3 emissions are broad categories that are challenging to precisely measure, and in many cases must be estimated. As is demonstrated by this year's inventory, employee commuting continues to account for the majority of Scope 3 emissions. Included in LLNL Scope 3 GHG emissions are the following:

- Employee commuting
- Employee business travel
 - Air travel
 - Rental or privately owned vehicle mileage
- Off-site domestic wastewater treatment
- Off-site municipal solid waste disposal
- Electrical transmission and distribution losses

Performance Status

In FY12 the Laboratory achieved a reduction of more than 12% in Scope 3 emissions from the FY08 baseline. The emissions reduction was primarily due to a reduction in air travel.

Plans and Projected Performance

LLNL Scope 3 emissions reductions will continue to focus on employee commuting and travel. Efforts include:

- Incentives for public transportation utilization
- Increased teleworking
- Incentives for carpooling and vanpooling
- Performing an employee commuting survey to better understand the sources of Scope 3 emissions and develop strategies to reduce them
- Promotion of LLNL sustainable travel policy to employees through LLNL Newslines with elements that include the following:
 - Encouraging employees to consider using public transportation to hotels, conferences, and airports
 - Encouraging carpooling when using rental cars
 - Assessing the need to travel for meetings; encouraging the use of alternate electronic communication methods (webinars, video conferences, teleconferences)

In September 2012, LLNL conducted a commuter survey to support a more accurate calculation of the employee contribution to LLNL's GHGs. The results of the survey, which are currently under evaluation, will be used to make recommendations to LLNL management of efforts employees are interested in participating in to reduce their GHG contribution.

Resources Required

The resources needed to reduce Scope 3 emissions have not been quantified at this point. Based on the results of the commuter survey, incentives to reductions associated with commuting have been suggested to management for consideration. Incentives that require funding will be determined, and, if approved, funding will be requested. The following need to be explored in order to better understand alternatives to Scope 3-related actions:

- The effectiveness and cost of additional video conferencing equipment to off-set air travel.
- Additional incentives to encourage alternative commuting.
- Upgrades to the on-site electric transmission and distribution system to reduce line losses.
- Researching alternative methods of providing electrical charging stations for POVs.

SSPP Goal 2.1

30% energy intensity reduction by FY15 from an FY03 baseline

Performance Status

LLNL's energy intensity was only marginally lower in FY12 compared to FY11. At the end of FY12, LLNL's net energy use intensity reduction savings was 14.14%, relative to the FY03 baseline. This reduction is less than DOE's target of 21%, as stated in the SSPP. However, if the space demolished and energy consumption is adjusted from the baseline year, LLNL would be at 20.94%, thereby meeting the goal. No facilities were demolished in FY12 due to a lack of funding. The Facility Information Management System (FIMS) list of facilities excluded from the energy intensity goal are attached in the Appendices section of this plan. Figure 2-3 illustrates the savings. The Energy Usage and Cost Report is included in the Consolidated Energy Data Report (CEDR).

The ESPC was completed in FY12. The Energy Management Control Systems (EMCS) upgrade in 23 facilities was completed and are currently in operation. LLNL is continuing to monitor the energy intensity reduction as a result of the ESPC project.

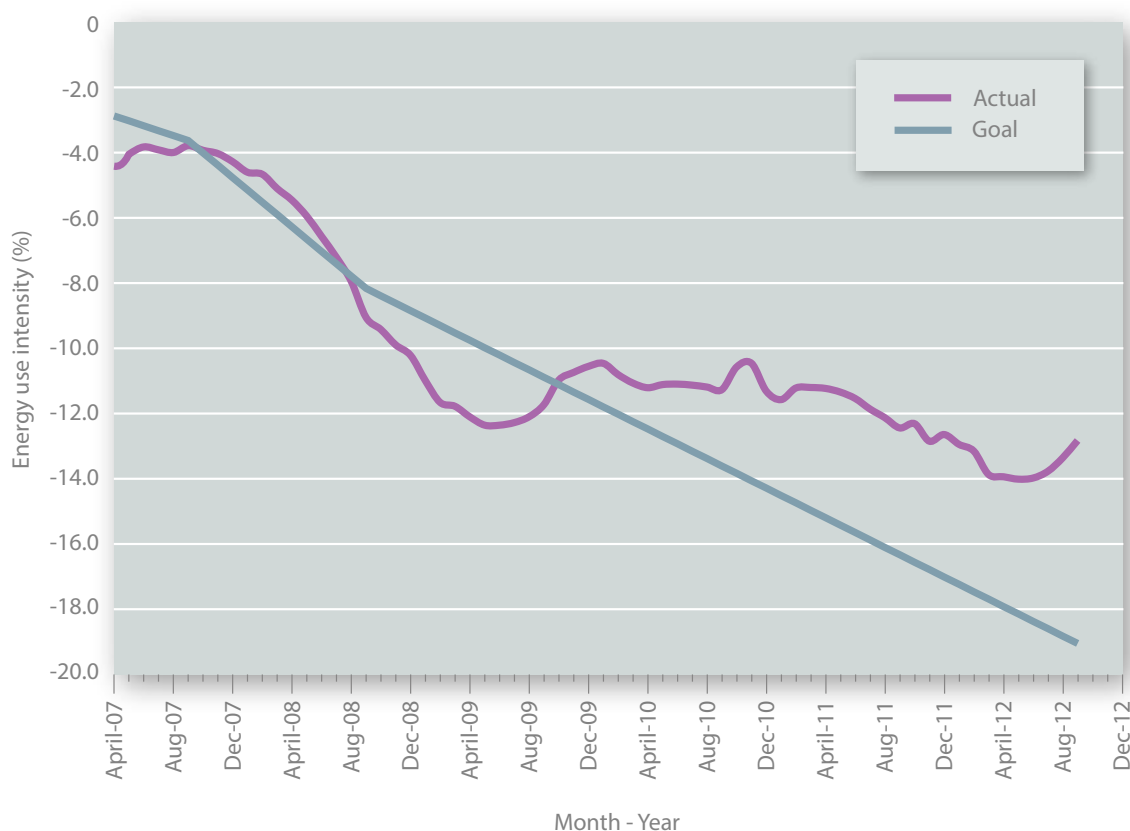


Figure 2-3. Energy use intensity savings through end of FY12 (running year energy intensity savings with zero REC credits and FY11 exclusions).

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LLNL continues to explore its energy usage in order to better understand how to strive towards reduction. The energy chart in Figure 2-4 estimates the sources of energy by type. The energy chart was updated with FY12 data and was created by incorporating metered data, lighting estimates, and equipment inventory. HVAC systems (42%) and lighting (17%) continue to be the two largest users of energy at LLNL. The breakdown helps to indicate where specific energy conservation efforts should be directed.

LLNL continues implement energy conservation projects. In FY12, an additional 22 street and pathway light fixtures were replaced with light-emitting diodes (LEDs). A study to add occupancy lighting sensors and replace existing, defective sensors has been completed. Also, several projects have been started to install low-cost energy conservation recommendations resulting from the facility audits. These projects were selected based on their highest savings contribution.

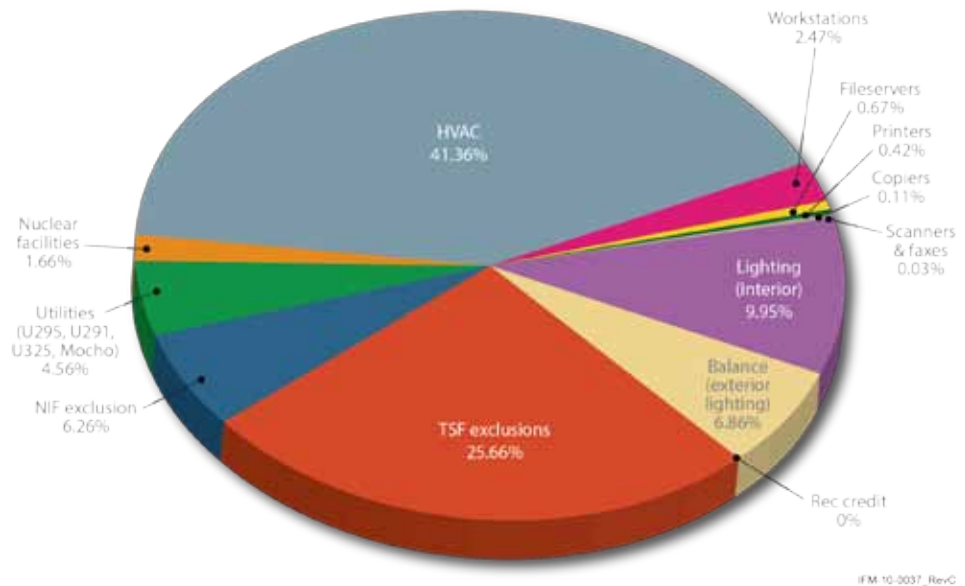


Figure 2-4. LLNL FY12 energy use.

On the Thermostat Initiative Project, another facility requiring 27 thermostats and covering 44,000 gross square feet was added to the portfolio in FY12.

In FY12, LLNL was again challenged to meet its energy intensity reduction goal. In the summer of FY12, there were 29% more cooling degree days (CDD) than the summer of FY11, and for the entire year, 13% more than the base year FY03, resulting in an increased burden on the Laboratory's HVAC cooling systems (Figure 2-5). However, if the MWh per CDD used is considered, LLNL used 267 MWh per CDD in FY12 compared to 304 MWh per CDD in FY11 and 356 MWh per CDD in the base year FY03 showing a downward trend. In the winter of FY12, there were 10% fewer heating degree days than the winter of FY11, and about 6% fewer than the base year FY03.

Overall, LLNL continued to reduce electricity usage by 14.34% and natural gas by 16.8%, both from the FY03 baseline.

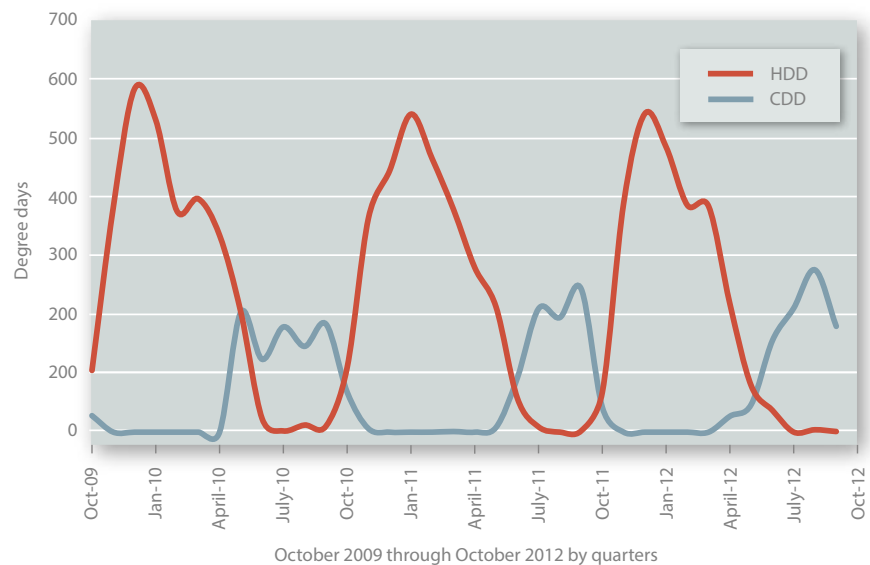


Figure 2-5. Cooling and heating degree days (data from City of Livermore).

Plans and Projected Performance

LLNL has developed a comprehensive list of energy intensity savings projects that includes the results from the EISA audits, compliance issues, deferred maintenance projects that have the significant energy savings, metering evaluations, and grassroots suggestions. The list will continue to evolve and expand as new energy efficiency opportunities are identified. It is prioritized by the energy savings return on investment (ROI) compared to the project costs; funding has been requested to perform projects that have an ROI of less than one year.

The testing and adjusting of existing lighting occupancy sensors is complete, and a total of 146 facilities have been evaluated for sensor use. LLNL re-evaluated its existing installed DDC systems, and implemented setbacks for heating and cooling where possible. This effort is continuing and, along with the installation of the new thermostats under the Thermostat Initiative Program, will continue to reduce natural gas and electricity consumption in FY13 and beyond.

Benchmarking of metered buildings was completed in 2012. LLNL completed consolidation of various lists of buildings with meters of varying types and conditions into one master list and used it as the basis for the facilities entered in ENERGY STAR Portfolio Manager. The metering information is analyzed, and when anomalies are found the facility manager is sent an “excessive use alert.”

Grassroots opportunities for energy savings are being evaluated and implemented. In FY13, LLNL will initiate an energy savings competition between residents of metered facilities, with the expectation that the facility residents’ competitive spirit will reduce energy usage and encourage energy efficient habits. The LLNL blog spot, “Idea Hub,” has a thread topic for sustainability. Throughout the year, these ideas will be evaluated, and, if deemed appropriate, will be added to the comprehensive list of energy intensity savings projects. As shown in the “Grassroots Energy Savings” highlight in this section, facility residents are encouraged to “power down” their office, lab, and storage equipment during the holidays.

One of the recommendations of the DOE/IG-0869 audit was to “Implement best practices related to billing for electricity usage to the maximum extent practicable.” This was LLNL’s practice prior to the contract transition, but stopped to conform to DOE cost accounting standards.

In addition to reductions in energy intensity and electrical and gas utilization, the planned actions mentioned above will also help reduce LLNL’s GHG emissions.

Based on LLNL’s best estimate of available resources for FY13, it is estimated that energy intensity savings will be 15% with an energy use of 1,225B BTU for the year, considering the total building area of 6,133K SF. As opportunities become available, LLNL will attempt to exceed this goal.

The Site Actual and Projected Electricity Consumption Table is shown in Figure 2-6; the Load Forecast Chart is shown in Figure 2-7.

The chart in the “Energy Savings Projects to Meet Goal” highlight in this section shows several projects that have been identified to reduce energy intensity at LLNL, such as interior and exterior lighting improvements, virtual servers, upgrading to high-efficiency motors, and installing variable frequency drives (VFDs).

Fiscal Year	2010A	2011A	2012A	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total Electricity Consumption	401	379	408	428	450	472	496	521	547	574	603	633
Baseline Load	260	250	251	263	276	290	305	320	336	353	370	389
HEMSF Facility 1 (TSF)	120	106	133	139	146	154	161	169	178	187	196	206
HEMSF Facility 2 (NIF)	21	23	25	26	27	28	30	31	33	35	36	38

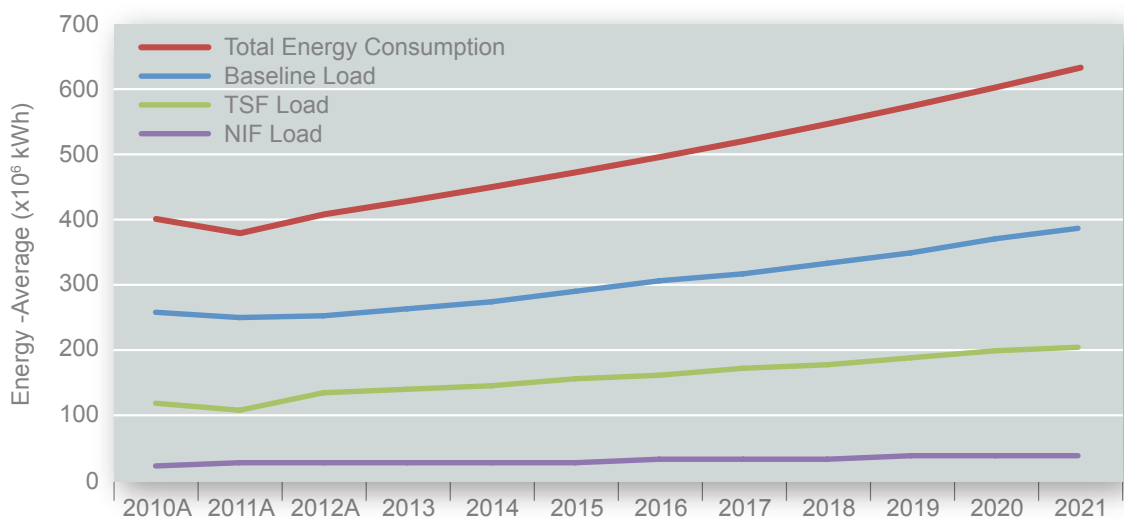


Figure 2-7. LLNL energy load forecast.

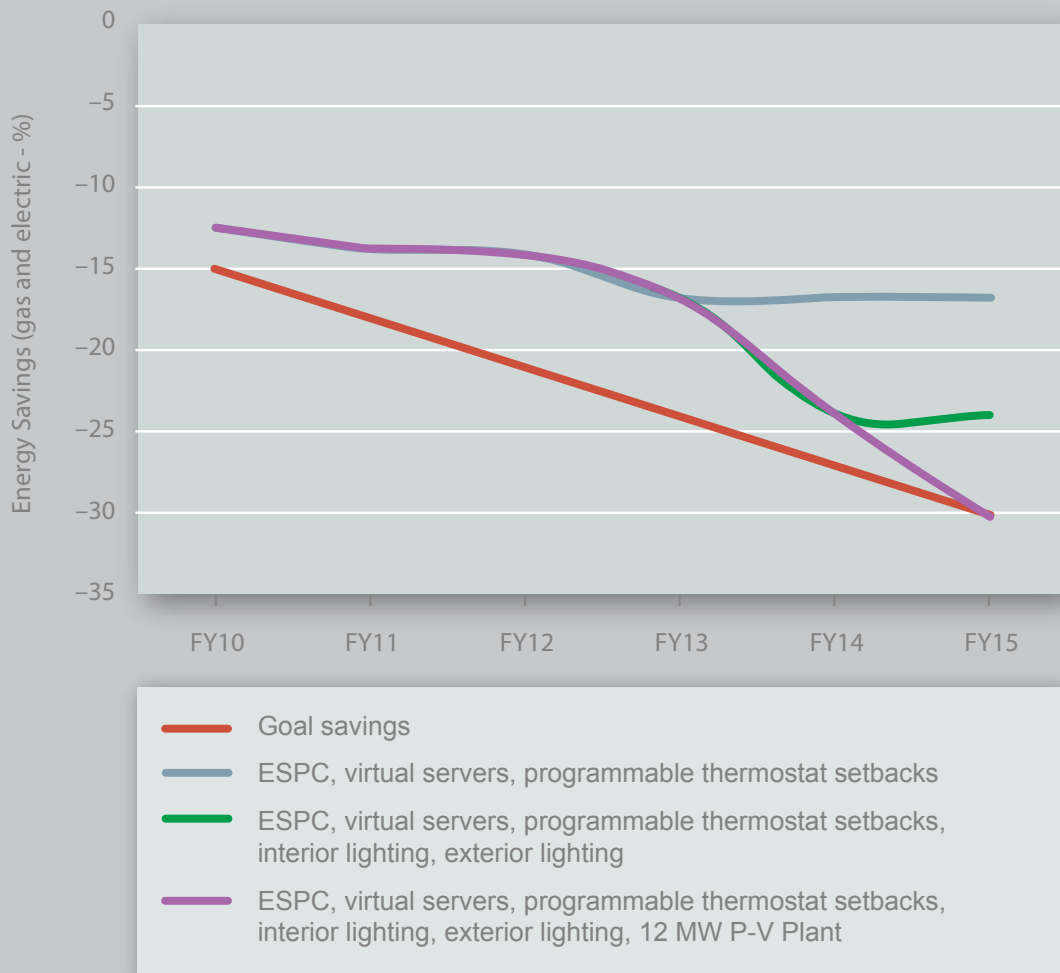
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Energy Savings Projects to Meet Goal

Past, present, and proposed

LLNL has identified various approaches to achieve its site-wide energy goals. Most projects demonstrate savings in a stepped fashion based on major facility and infrastructure upgrades.

As plotted on the chart below, only through a significant influx of renewable generation will the goal be attainable given the current rate of growth in LLNL's energy-intensive mission.



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Resources Required

Funding will be required for projects identified in the CEDR, including the installation of additional programmable thermostats, interior and exterior lighting upgrade projects, and other energy conservation-related projects. LLNL is continuing to develop a strategy to justify energy conservation projects in comparison to its low cost of electricity.

As funds become available, plans to reduce deferred maintenance while at the same time increasing energy efficiency will be implemented. When replacing aging equipment identified in the master deferred maintenance list, new equipment will be the latest, most energy-efficient type available. A new program that will include an estimate of the energy savings achieved by deferred maintenance replacements is in place.

Figure 2-8 lists projects that, if funded and implemented, would allow LLNL to meet its energy intensity reduction goals.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Boiler Replacement Project - FY13	4	0.3	14.4	4	0	0	0
Boiler Replacement Project - FY14	5	0.3	14.4	0	5	0	0
Building Automation Systems/EMCS	5	0.9	5.4	2	2	2	0
Building Envelope Modifications	4.5	0.14	32.7	1.5	1.5	1.5	0
Electric Motors and Drives, Variable Speed Motors or Drives	2	0.54	4.4	0.7	0.7	0.7	0
Site-wide Lighting Improvements, Exterior	3	0.4	6.5	1	1	0	0
Site-wide Lighting Improvements, Interior	5	3.8	1.3	0	0	5	0

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Figure 2-8. Proposed projects in support of SSPP Goal 2.1.

Grassroots Energy Savings

Laboratory management communicates energy savings reminders that each individual can make a difference.

The following information was posted in Newsline, LLNL's online employee news publication:

Save energy while you're away — turn off or power down

Whether you work in an office or lab, you can do your part to conserve energy while you're out enjoying the holidays.

Before you leave for the long holiday weekends, remember to take a look around your work area and turn off or power down any equipment that won't be used while you're gone.

For information on other things you can do to help LLNL conserve energy, see the LLNL EMS website.

An example of holiday energy savings reminders circulated to employees throughout the Laboratory:

Every Kilowatt Counts!

In keeping with national and Laboratory energy savings goals, we ask for your assistance over the coming holidays. Please take a few moments to evaluate your work areas — offices, labs, storage, etc.

Simple energy savings suggestions:

- Power down all non-essential equipment
- Close windows
- Set locally controlled thermostats into vacation/power saving mode
- Turn off all non-required room/area lights
- Turn off all computer monitors



SSPP Goal 2.2

EISA Section 432 energy and water evaluations

The first round of Energy Independence and Security Act (EISA) facility audits was completed in FY12. The list of facilities to be audited for the second round is currently being developed. LLNL's strategy for the second round of audits is to not include the major high-energy users (i.e., Terascale Facility [TSF] and NIF). This will allow for other facilities to be audited where low-cost or no-cost measures can still be identified. It is not feasible to audit a LEED facility such as TSF where a continuous improvement program is in place and mission demands are high priority. In fact, a "Free Cooling Project" has been designed for TSF and is ready for construction and awaiting funding.

Energy audits to meet EISA Section 432 and efforts to increase efficiency (e.g. combining energy audits with condition assessment surveys) along with re-commissioning/retro-commissioning are constantly being evaluated. Meetings with the facility managers of the facilities identified in the reports are being held to discuss the recommendations of the recent energy audits to map out a path forward, starting with the biggest opportunity energy savers. Several projects are ongoing related to the recommendations.

There are three Qualified Certified Energy Managers (CEM) working for LLNL at the end of FY12. As funds become available, LLNL hopes to increase the number of CEMs as some Facility Managers (FMs) or Facility Points of Contact (FPOCs) are being encouraged to enroll in the program.

Figure 2-9 lists projects that, if implemented, would allow LLNL to meet its energy and water evaluation goals.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
ECM 3.2 Facility Audits	3.5	0.9	3.8	3.5	0	0	0

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Figure 2-9. Proposed projects in support of SSPP Goal 2.2.

SSPP Goal 2.3

Individual buildings or processes metering for 90% of electricity (by October 1, 2012); for 90% of steam, natural gas, and chilled water (by October 1, 2015)

Performance Status

The Metering Plan was updated in November 2012 and aligns with the October 2012 NNSA Guidelines. LLNL's commitment to support the DOE Strategic Sustainability Performance Plan (SSPP) and comply with EPACT 2005 and EISA 2007 regulations is further exemplified in the latest issue of its Metering Plan. LLNL is committed to monitor and reduce its energy usage and find innovative ways to lead the complex while at the same time meeting its mission goals.

LLNL's metering portfolio, as of October 1, 2012, is shown in Figure 2-10.

Utilizing \$640,000 in funds received from the Energy Modernization and Investment Program (EMIP), LLNL was successful in meeting the goal of installing the 47 electricity meters, and for achieving Energy Policy Act (EPAct) 2005 compliance. In addition to meeting the compliance measure, five additional electrical meters, and one natural gas meter were added to the project. The additional electricity meters were selected from the HPSB list to ensure progress toward meeting the FY15 HPSB goal. The project plan included the re-connection of existing Ethernet and/or analog communications, installing new Ethernet communications where existing communications did not exist, and the installation of analog signal where Ethernet connection was not feasible. The project also replaced damaged/malfunctioning meters with new Ethernet-capable meters where necessary. The 55 electricity meters that were completed under the EMIP project alone account for 36% of the total Site 200 electricity load.

	Number of Meters	Number of Buildings
Electricity		
Advanced Individual	109	109
Advanced Shared	138	268
Standard	49	7
No Meter	0	24
Total	296	408
Natural Gas		
Equipment Meters	25	10
Building Meters	24	22
No Meter	0	5
Total	49	37
Water		
Advanced	10	0
Standard	13	1
Total	23	1

Figure 2-10. LLNL is currently developing a complete water meter deployment plan. Due to the low water use, a measurement plan for water use at Site 300 has not been in place since 2007.

Plans and Projected Performance

Below is a summary of how LLNL's performance compared to the SSPP goals. More details are available in the LLNL Metering Plan Update dated November 2012.

SSPP Metering Stretch Goals	FY12 Performance Status	Planned Actions and Key Issues
Install electricity meters on individual buildings or processes at each site so that these individually metered buildings and processes account for at least 90% by October 1, 2012.	90% achieved as of the end of FY12.	LLNL plans to recommission and calibrate all other electricity meters, and will develop a plan to connect its remaining meters to the MV-90 computer.
Install natural gas, steam and chilled water meters on individual buildings or processes so that these individually metered buildings and processes account for at least 90% by October 1, 2015 (90% for each utility)	90% stretch goal: 90% site projected percentage to be achieved as of the end of FY15.	As of FY12, LLNL meters approximately 52% of its natural gas use at the site. Steam is not metered and Chilled Water use is captured in the building's energy use LLNL is projecting to meet the stretch goal of 90% by FY15.
Independently meter 40% of agency data centers by October 1, 2011 working toward a goal of 100% by October 1, 2015.	Survey to determine the number of data centers that will meet the criteria was completed in FY12.	LLNL plans to request funding to consolidate the data centers which were surveyed in FY12, and develop a data center metering plan. Based on the new definition of "greater than 500 SF and one rack," LLNL will likely not be able to meet this goal by FY15.

Resources Required

Figure 2-11 lists projects that, if funded, will ensure that LLNL facilities that use 90% of its energy and natural gas meet SSPP Metering Goal 2.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Natural Gas Metering	3.5	0.065	54	1.2	1.2	1.2	0
Water Metering	1.5	0.025	59	0.5	0.5	0.5	0
TOTAL	5	0.09	55	1.7	1.7	1.7	0

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Figure 2-11. Proposed projects in support of SSPP Goal 2.3.

SSPP Goal 2.4

Cool roofs, unless uneconomical, for roof replacements unless project already has CD-2 approval. New roofs must have thermal resistance of at least R-30.

Performance Status

LLNL's roof replacement plan includes replacing end-of-life roofs with cool roofs, unless doing so proves uneconomical. Approximately 225,000 SF of cool roofs have been installed on a total of fifteen buildings. Figure 2-12 illustrates LLNL's expected roof life cycle.

Plans and Projected Performance

All roof replacements and new roofs at LLNL are planned to be cool roof installations. Additional roofs are being designed for FY13 replacement. These include: Buildings 256, 823A, 832A, 813, 383, 4525, 335, and U424. In FY13, cool roof construction is anticipated for Buildings 256, 813, 823A, and 383.

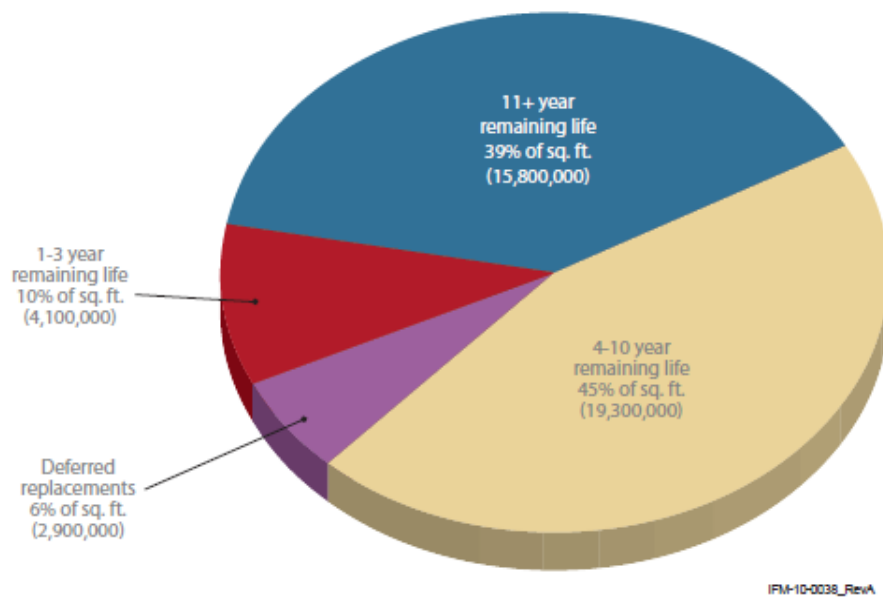


Figure 2-12. LLNL roof expected life cycle (percent square footage in category, replacement cost).

Resources Required

Figure 2-13 lists projects that, if funded and implemented, would allow LLNL to meet its cool roof installation goals.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Cool Roofs - FY13	1	0.04	32.1	1	0	0	0
Cool Roofs - FY14	2	0.05	46.4	0	2	0	0
Cool Roofs - FY15	3	0.06	45.2	0	0	3	0
TOTAL	6	0.15	43	1	2	3	0

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Figure 2-13. Proposed projects in support of SSPP Goal 2.4.

SSPP Goal 2.5

15% of existing buildings greater than 5,000 gross square feet (GSF) are compliant with the Guiding Principles (GPs) of HPSB by FY 2015

Performance Status

The five initial building assessments using the DOE HPSB Assessment Tool were completed in 2011; in 2012, assessments for Buildings 1677, 1888, 1889, and 4675 were completed. These nine buildings have met the requirements of the five HPSB Guiding Principles: Integrated Design, Energy Performance, Water Use Reduction, Indoor Environmental Quality, and Materials Conservation (Figure 2-14).

Assessments are on track to meet the FY15 15% goal. Based on square footage, the task of assessing 15% of the enduring inventory over 5,000 square feet using the LEED system or the HPSB Assessment Tool is 50% complete. Based on number of buildings, the task of assessing 15% of the enduring inventory over 5,000 square feet using the LEED system or the HPSB Assessment Tool is 59% complete.



Figure 2-14. The Five Guiding Principles of High Performance Sustainable Building.

Plans and Projected Performance

Building 311 is scheduled for U.S. Green Building Council (USGBC) LEED submittal in FY13/FY14. The estimated cost of development of the submittal packages of this building is estimated at \$60K, which includes staff time for researching building history, building assessments, completion of USGBC LEED templates, and providing all required support documentation. An initial survey of the lighting and HVAC systems identified and implemented opportunities for lower cost improvements that had a positive effect on the building's overall energy savings; currently, additional funding is being sought to make the remaining changes. A small portion of the funding is set aside for the registration and review fees charged by USGBC/Green Building Certification Institute (GBCI). Funding has not yet been identified for this effort.

In FY13, Buildings 1739, 1878, 1879 and 6925 are scheduled for DOE HPSB assessments which are embedded in the U.S. Environmental Protection Agency (EPA) Portfolio Manager benchmarking website. The facilities will be assessed and all relevant information will be reported using the HPSB Assessment Tool. This includes tracking all energy usage, building ventilation and overall systems' performance, irrigation studies for possible water savings, and demonstrating that green cleaning, integrated pest management and low-emitting materials are in use.

Resources Required

The overall scope of this project is anticipated to require a multi-year effort, and scheduling of upcoming projects is based primarily on staff availability. Funding needed to complete the long-range tasks will be requested in future fiscal years.

The estimated cost of development of the HPSB submittal packages of four buildings is estimated at \$12K each. The only anticipated building modification is the addition of occupancy sensors for lighting control. Funding has not yet been identified for this effort.

Pending funding, additional staff will be hired and/or current staff will be trained to aid in completing more USGBC LEED/HPSB assessment templates, and providing all required support documentation.

Figure 2-15 lists projects that, if funded and implemented, would allow LLNL to meet its HPSB goal.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
HPSB Certification	0.45	0	N/A	0.15	0.15	0.15	0
TOTAL	0.45	0	N/A	0.15	0.15	0.15	0

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Figure 2-15. Proposed projects in support of SSPP Goal 2.5.

SSPP Goal 2.6

All new construction, major renovations, and alterations of buildings greater than 5,000 GSF must comply with the Guiding Principles (GPs)

Performance Status

All new construction greater than 5,000 GSF will comply with the GPs (e.g., HPSB, LEED, etc).

Plans and Projected Performance

LEED Gold certification process is underway for one new construction project, Building 654 (HPC Data Center). The design portion of the project is complete; the construction is not yet funded.

Resources Required

Line item funding is being requested for construction of the new Emergency Operations Center (EOC) in FY16/17. LLNL Institutional General Plant Projects (IGPP) funding will be used to construct one new building each year, for the next three years (Figure 2-16). New buildings will be constructed to meet either LEED Gold or HPSB certification.

To achieve LEED Gold certification, construction costs are generally 10% higher than usual.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
IGPP Funded, HBSB Certified Building	30	N/A	N/A	10	10	10	0
TOTAL	30	N/A	N/A	10	10	10	0

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Figure 2-16. Proposed IGPP projects.

SSPP Goal 2.7

7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter

Performance Status

Due to the low cost of purchased power, installing renewable energy at LLNL has been a challenge. LLNL is a member of the Northern California Sites Electric Power Consortium (the Consortium). The Consortium includes LLNL, Lawrence Berkeley National Laboratory (LBNL), Stanford Linear Accelerator Center (SLAC), and Sandia National Laboratory California. The Consortium currently utilizes two sources of power to meet its annual energy requirements: 1) the Central Valley Project (CVP) Base Resource allocation of hydropower; and 2) wholesale market power purchases. WAPA is the Consortium's procurement agent, and makes any required wholesale purchases on the Consortium's behalf.

The wholesale power rates are considerably less expensive when compared to local public utilities such as Pacific Gas & Electric (PG&E). These low rates have also made renewable energy development incur a longer ROI relative to projects with standard utility rates. The FY12 requirement that 7.5% of renewable source electricity was met through the purchase of renewable energy credits (RECs). LLNL purchased 33,799 MWh of RECs in FY12 and submitted a waiver request in 2008 that justifies substitution of RECs for on-site generated renewable energy.

In FY11, LLNL completed a Site 300 renewable resource assessment and valuation. The report details the potential for wind and solar photovoltaic (PV) resources at LLNL's Site 300. A renewable resource assessment was completed for LLNL Site 200 in 2008. Two projects are currently being considered at LLNL by LSO as a result of these assessments. For the Site 200 project, a Request for Information (RFI) was issued for a combination of ground-mounted solar PV and solar PV carports. Based on responses to the RFI and further evaluation of feasibility, the project was focused on a 10-acre 2-4 MW ground mounted solar installation in the Site 200 northwest buffer zone. The LSO/LLNL project team has developed a draft solicitation notice and is working with the National Renewable Energy Laboratory and Western Area Power Administration. The current project schedule indicates that construction could begin in FY13.

Progress has continued on the Site 300 Wind Power Prediction Project (Figure 2-17). Recent work has focused on an assessment of the layout and costs for a renewable energy research facility at site 300 important for research and development associated with wind and solar energy, energy storage, and how those can integrate into a smartgrid system.

LLNL is currently exploring the use of Site 300 for renewable energy research purposes. The goal of this effort would be to

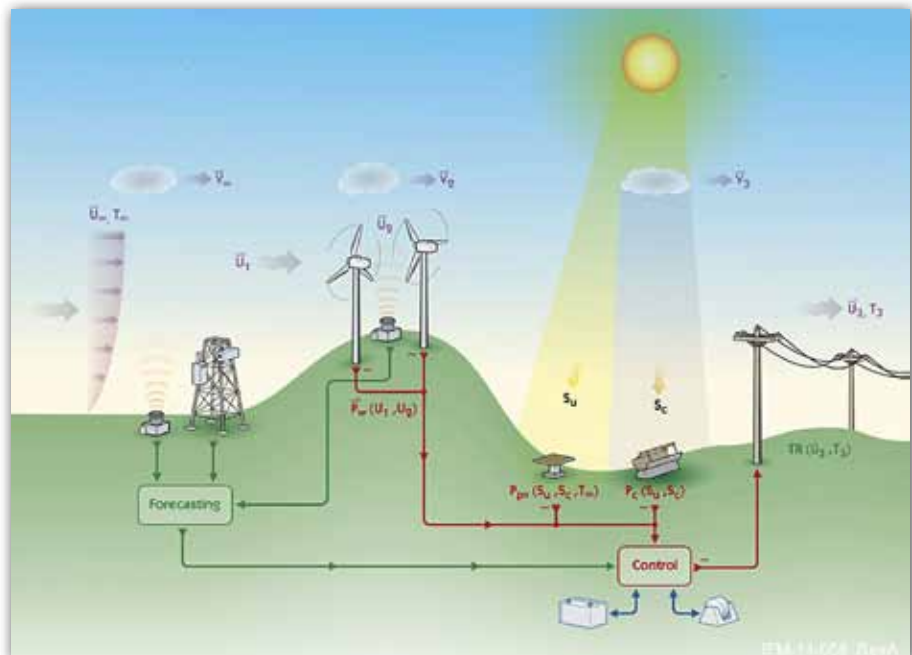


Figure 2-17. Site 300 Wind Power Prediction Project conceptual drawing.

both provide a test bed for existing renewable technology (solar and wind) and to improve the multi-scale modeling of renewable resource availability and variability, using high dimensional models in concert with deployed sensors.

LLNL has deployed solar energy at smaller a scale, including a number of pathway and parking lot lights, and environmental sensors. In FY12, LLNL discussed renewable energy options (including fuel cell purchases) with renewable energy providers, yet the relatively high cost of these projects prohibited their actualization.

Details of the REC purchases can be found in the FY13 CEDR on the “List of Purchased Renewable Energy” worksheet.

Plans and Projected Performance

For FY13, LLNL will purchase RECs to comply with the renewable energy requirement. The amount of RECs purchased will decrease substantially once solar power is installed at LLNL. LLNL will continue to support LSO and the solar provider to ensure the new power generation complies with all safety and electrical plans for the sites. LLNL will continue to explore research opportunities for renewable power generation at Site 300; if these projects come to fruition, LLNL use that power as well. The Site 200 renewable energy goals would contribute to DOE’s goals as well.

Even with a 2MW array, LLNL would need to purchase additional RECs. Renewable energy projects are very capital intensive. In general terms, a 6MW solar array would be required to meet the renewable energy goals for LLNL; this would require an approximate \$24M investment. A 6MW solar array would also greatly contribute to LLNL’s energy reduction goals as well. The high cost of on-site renewable power indicates an ROI that would exceed the projected 20-year useful life of the equipment. When compared to WAPA rates, renewable energy only becomes economically feasible when the producer is a private entity eligible for tax credits, tax exemptions, depreciation and other assorted incentives. A Power Purchase Agreement (PPA) with a private entity appears to be the best option for renewable energy at LLNL. The private entity would install, own, operate, and maintain a “behind the meter” renewable energy project. The additional funds needed to subsidize a PPA for renewable energy purchases would depend on the size, type, and location of renewable energy at LLNL.

Current plans for a new computing facility have incorporated air cooling for its needs, as opposed to using traditional water cooling, and the corresponding energy needed for cooling. The new computing facility will be HPSB compliant as well. This innovative design will not increase LLNL’s water use, and will require less electrical demand than a traditional design. DOE Energy Efficiency and Renewable Energy (EERE) Fuel Cell Technologies Program has funded a design study for a 2.8 MW fuel cell to provide power to the LVOC computing facility. The study includes a definition of utility connections, location, heat and water plumbing, and other engineering specifications. The goal of the study is to define the requirements so that an RFP can be issued for bids for fuel cell construction. It is anticipated that a draft Request for Proposals (RFP) will be available in December 2012.

Solar water heating has not been incorporated into LLNL new buildings plans. Hot water heating is a relatively low energy use, relative to the impact of electricity used for cooling and computation. New building designs that increase the electric efficiency of computation will help off-set LLNL’s increasing need for power for expanding mission.

For the next fiscal year, LLNL will accomplish the following:

- 1) Continue to support the DOE LSO in its pursuit of on-site renewable energy at Site 200
- 2) Continue exploring scientific opportunities in renewable energy
- 3) Continue discussions with renewable energy providers on innovative opportunities in renewable energy for LLNL
- 4) Continue collaboration in the Northern California DOE Laboratory Consortium

SSPP Goal 2.8

Regional and local planning

Per SSP guidance, Goal 2.8 is discussed in this section after 7.3.

SSPP Goal 3.1

10% annual increase in fleet alternative fuel consumption by FY 2015 relative to a FY 2005 baseline

Performance Status

Based on earlier guidance from DOE, LLNL continued to focus its alternative fuel strategy on the use of ethanol fuel (E85) as its fuel of choice. In 2007, LLNL built an ethanol fuel station with a 12,000 gallon underground tank at a cost of \$1.3M. Subsequently, LLNL restructured its fleet to be composed mostly of E85 compatible vehicles.

In FY12, LLNL's use of alternative fuels increased 3.5% relative to the previous year's consumption.

Despite the increased use of alternative fuels, LLNL did not reach the DOE annual goal of 10%, primarily due to the mandated acquisition of hybrid vehicles in FY10 (Figure 2-18). While hybrid vehicles offer substantial efficiency increases, they are not equipped to use E85 fuel.

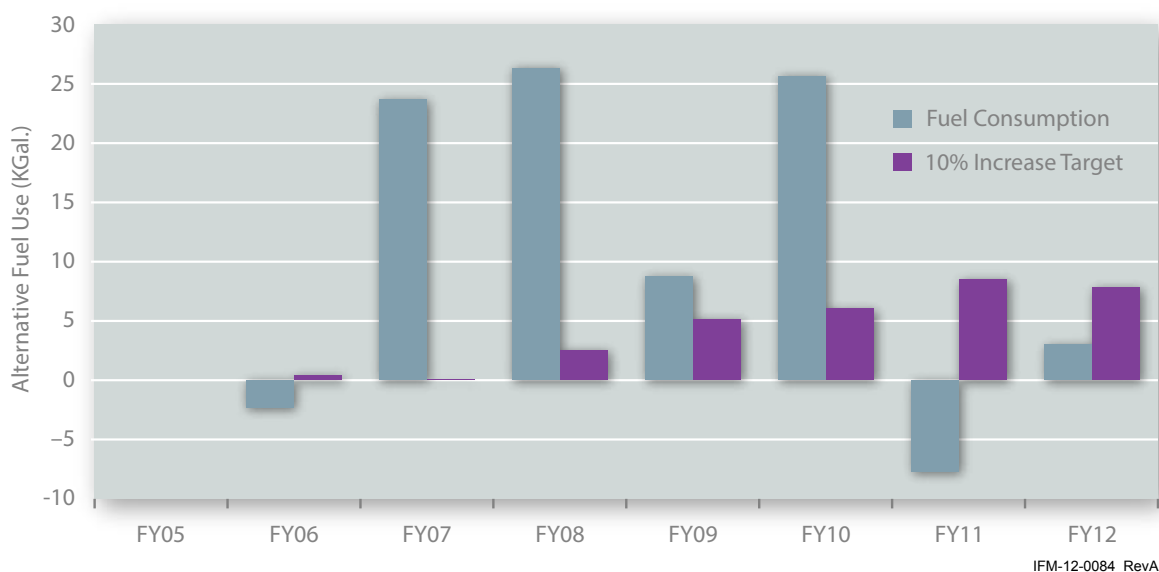


Figure 2-18. Annual alternative versus. fuel use, target versus actual.

In comparison with the overall target of 94.9% projected for FY12, LLNL's actual overall percentage for same period was 255%, exceeding the projected target by 160% (Figure 2-19).

In FY12, LLNL acquired additional E85 vehicles from GSA to replace conventional gasoline vehicles.

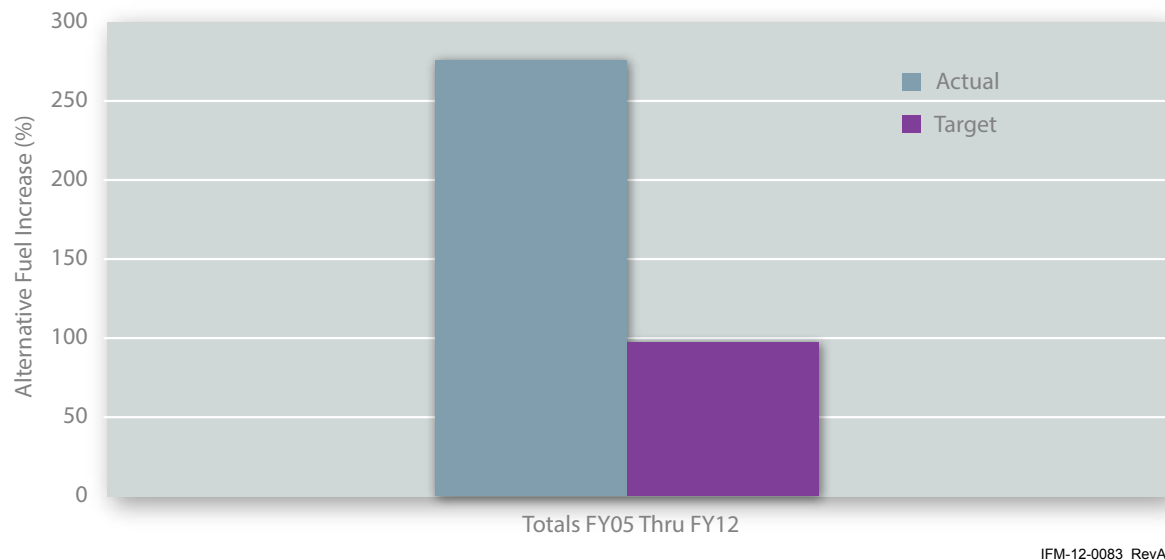


Figure 2-19. Overall alternative fuel increase, target versus actual.

Plans and Projected Performance

LLNL will maintain its AFV fleet and continue to replace the existing unleaded fuel fleet with E85 vehicles, as well as those AFVs (E85) that come up for replacement.

SSPP Goal 3.2

2% annual reduction in fleet petroleum consumption by FY 2020 relative to a FY 2005 baseline

Performance Status

In FY12, LLNL decreased its petroleum fuel consumption by 67% from the FY05 baseline, well exceeding the required annual 2% reduction and the overall 14% through the end of FY12 (Figure 2-20). This reduction was achieved by replacing unleaded vehicles with AFVs, reducing miles driven, right-sizing the fleet, using on-site mass transportation, performing regular vehicle preventive maintenance, and the introduction of hybrid vehicles into the LLNL vehicle fleet.

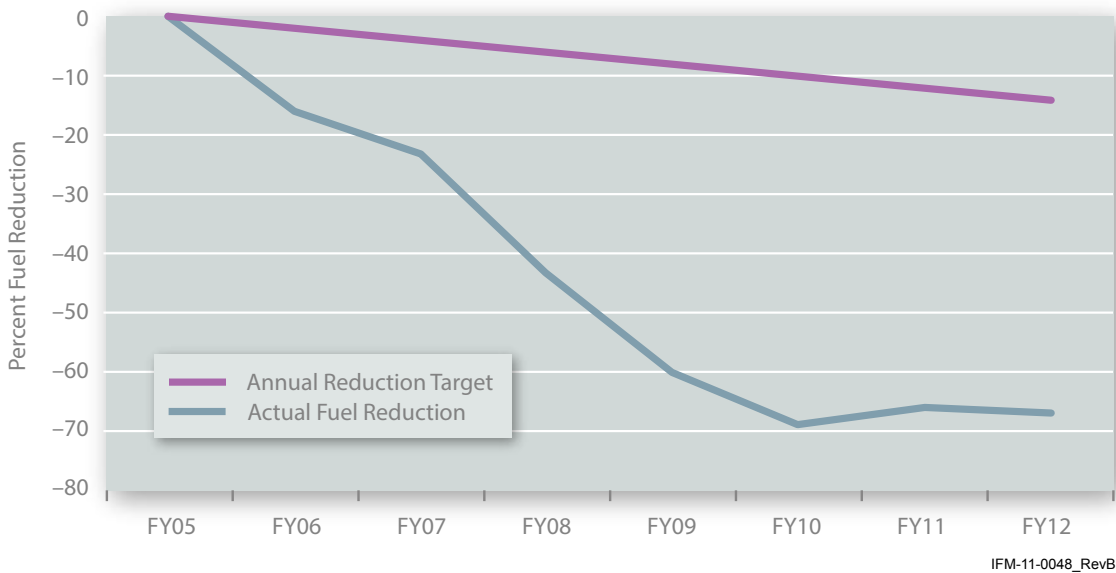


Figure 2-20. Petroleum fuel reduction (target is 2% reduction from 2005 baseline).

Plans and Projected Performance

LLNL will continue to strengthen its alternative fuel infrastructure by replacing conventional fueled vehicles with alternative fueled vehicles and by promoting the use of alternative fuels.

LLNL will continue to analyze and evaluate its fleet strategy through the following transportation initiatives.

Restructuring the fleet vehicle type.

LLNL is moving to smaller and more fuel-efficient vehicles and is determining the right vehicle type based on functionality including electric vehicles as discussed in Goal 3.3. The goal is to ensure that the vehicle provided is the type required to safely and efficiently perform needed tasks.

Restructuring the bicycle fleet.

LLNL has a fleet of approximately 600 bicycles that are used as an alternative method for on-site transportation. Seventy new chainless and airless bicycles were purchased in FY12.

The bicycles will help improve employee safety and may reduce bicycle maintenance costs.

Resources Required

Figure 2-21 lists projects that, if funded and implemented, would allow LLNL to further meet its reduction in fleet petroleum consumption goal.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Chainless Bicycles	0.4	–	–	0.13	0.13	0.13	0
Expanded Taxi Service	1.5	–	–	0.5	0.5	0.5	0
TOTAL	1.9	–	–	.63	0.63	0.63	0

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Figure 2-21. Proposed projects in support of SSPP Goal 3.2.

SSPP Goal 3.3

100% of light duty vehicle purchases must consist of alternative fuel vehicles (AFV) by FY 2015 and thereafter (75% FY 2000-2015)

Performance Status

LLNL met and exceeded the required 75% replacement of fossil fuel light-duty vehicles with AFVs in FY12. A total of 84 light-duty vehicles were scheduled to be replaced in FY12; all 84 vehicles were replaced with E85. LLNL's current alternative fuel fleet accounts for 87.2% of the total light-duty vehicles (Figure 2-22).

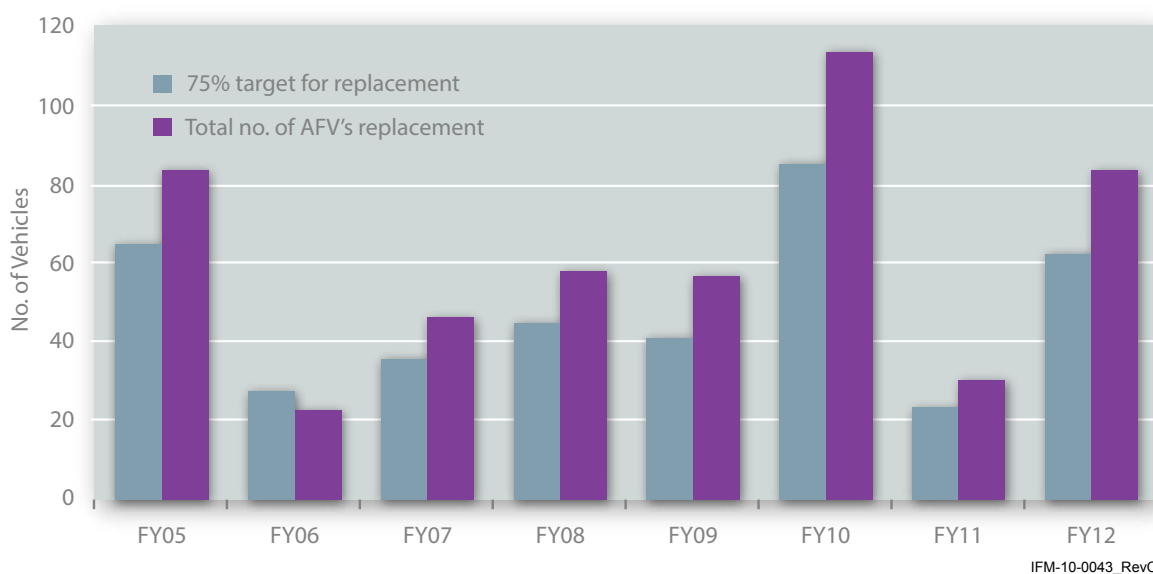


Figure 2-22. LLNL has replaced 75% of its fossil fuel light-duty vehicles with AFVs. Data available beginning 2005.

Plans and Projected Performance

LLNL will continue replacing its fleet with AFVs as manufacturers make them available and exploring different alternative fueled vehicle options, specifically in the area of electric vehicles. LLNL will continue with its main alternative fuel vehicle strategy, which is based on E85. With this initiative, the AFV fleet mix will include hybrid vehicles as replacements for regular unleaded or diesel vehicles.

Funding Strategy

No projects are necessary at this time to allow LLNL to meet this goal.

SSPP Goal 3.4

Reduce fleet inventory of non-mission critical vehicles by 35% by FY 2013 relative to a FY 2005 baseline

Planned Action

If funded and implemented, LLNL will conduct a Vehicle Allocation Methodology review for determining the optimum fleet inventory. Emphasis will be placed on eliminating unnecessary or non-essential vehicles from the fleet inventory and ensuring lifecycle cost-effectiveness of maintaining such inventory. LLNL's FY13 goal targets a 10% reduction in the light duty vehicle fleet. The review will include an assessment of the taxi service model to compensate for the loss of individual vehicles at a potential annual cost of \$200K.

Additional guidance from the U.S. Office of Management and Budget (OMB) and DOE/NNSA is expected during FY13 on government vehicle inventory.

SSPP Goal 4.1

26% potable water intensity reduction by FY 2020 from a FY 2007 baseline

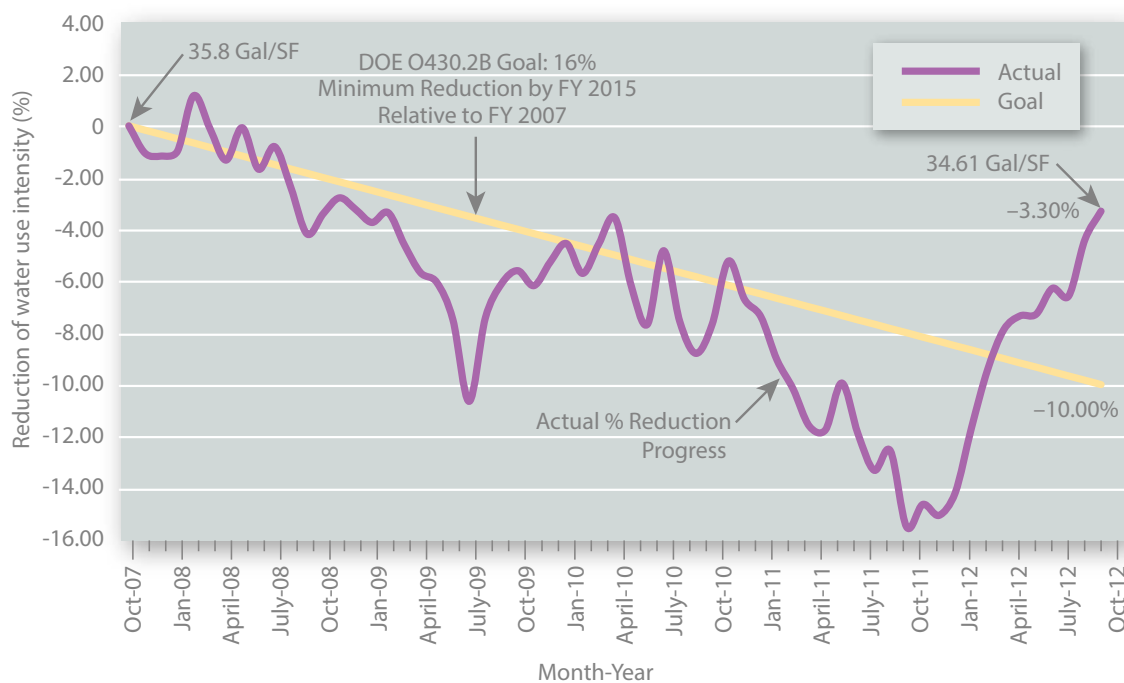
Performance Status

In FY12, LLNL's potable water intensity savings reduced from 12.56% (FY11) to 3.3%. This is primarily due to the following four factors:

- Cooling tower make-up dramatically increased due to water supplier maintenance and a warmer than normal summer
- Increased irrigation water use due to a warmer than normal summer
- Leaks in the potable water distribution system
- Increase in TSF programmatic operations

Projects listed in Figure 2-25 address all four issues and, if funded and implemented, would allow LLNL to meet its water intensity reduction goal. The free cooling concept at TSF shown in Figure 2-32 will also contribute to reaching the goal.

FY12 was a warmer year than FY11. There were 115 more cooling degree days (CDD) than in FY11, and 180 more than base year FY07. This equates directly into more cooling demand. As the chillers and air conditioning (AC) units respond to the demand, more water is required to ultimately quench the load. In FY12, LLNL achieved a 3.30% water use reduction, below the federal goal of 10% (Figure 2-23). However, if the cooling tower kgals per CDD is considered, LLNL used about 66 kgals in FY12 versus 73 kgals for FY11, and 70 kgals for the base year FY07, indicating efficient use of cooling water. The water consumption and cost data report is included in the CEDR.



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Figure 2-23. Potable water reduction progress at FY12-end.

Potable water use at the cooling towers was up nearly 14% from FY11, an increase of 12,473 kgals. This is mainly due to the unavoidable switch to an alternate water supplier (Zone 7) when the main supplier (Hetch-Hetchy) was down for maintenance. This resulted in an increase of about 8,395 kgals in the cooling tower make-up, as the alternate water supply has less desirable water quality attributes. Another factor was the mission growth at the TSF wherein an additional 10,585 kgals were needed to support the mission. However, if the TSF mission growth and the Zone 7 effect were considered, LLNL's water reduction savings would be at 11%, exceeding the 10% goal.

Estimated water use for irrigation was up by 2% from FY11 consumption, mainly due to the lack of rainfall in FY12. LLNL had 8.97 inches of rainwater in FY12 compared to about 16.24 inches in FY11, which imposed a burden on the site's irrigation demand. In FY12, four smart controllers were installed at LLNL bringing the total to ten, covering approximately 35% of the site's landscaping. It is estimated that compared to traditional standard controllers, smart controllers will save at least 18% of the irrigation water. The system uses a computer program that references data from on-site weather stations that measure wind, rain, temperature, and evaporation. That information, along with a factor for vegetation type, is used to adjust the amount of water needed in a particular area. Additional smart controllers are planned to be installed as funding allows.

In FY12, several significant water leaks and pipe breakages were identified in the LLNL Site 200 closed-loop low conductivity water (LCW) distribution system. An estimated 7,500 kgals of water was lost to the ground, accounting for approximately 3% of LLNL's water use in FY12.

A breakdown of LLNL potable water consumption is illustrated in Figure 2-24. The cooling tower make-up component is currently at 41percent, while the irrigation component is approximately 35%.

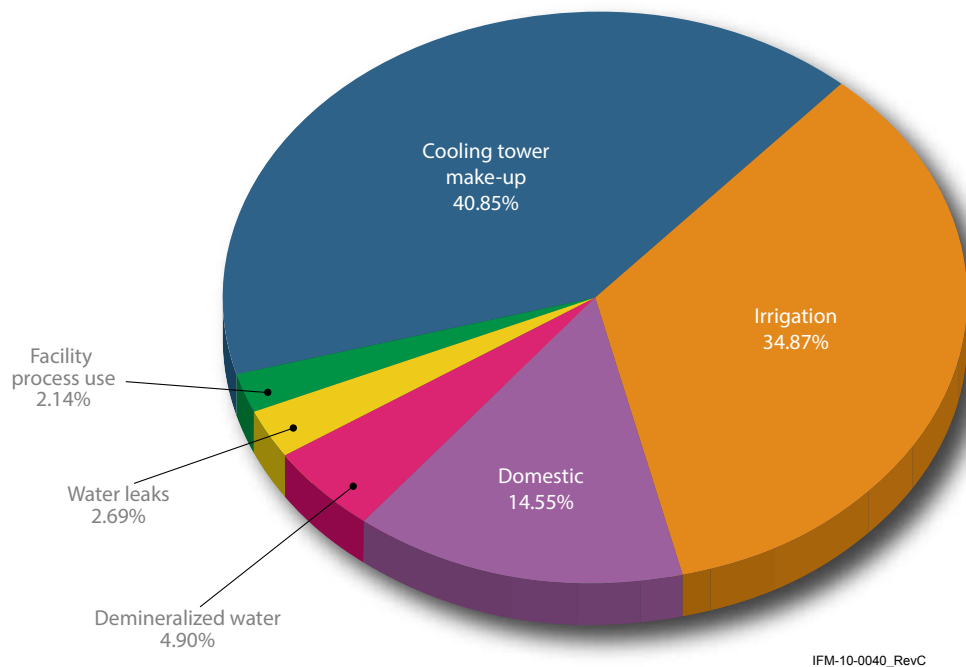


Figure 2-24. LLNL FY12 potable water use breakdown.

Current LLNL practice is to meter areas or zones of greatest water use, such as the cooling towers and irrigation zones, rather than water use at individual buildings. All five cooling tower make-up water systems at LLNL are furnished with standard water meters. LLNL plans to upgrade all water meters to advanced meters, pending funding. This will allow a more timely and accurate accounting of the total cooling tower make-up water load.

There are several factors that will make it difficult to meet the FY20 goal without additional resources to execute the needed water savings projects. Some challenges in the future include:

- The main supplier of LLNL potable water has an annual shut down for maintenance. This shut down directly impacts the amount of water LLNL must use as make-up water in its cooling towers. At least 1% of LLNL's total annual consumption will be needed because the alternate supplier's water quality has less desirable attributes and allows for only a few cycles of concentrations at the cooling towers. In addition, this imposes an added burden to LLNL's sewer system, as the extra blow down from the cooling towers is discharged to the sanitary sewer system.
- Continued mission growth at the TSF requires additional cooling tower make-up. Unlike energy intensity calculations, there are no exclusions for mission growth for water reduction.

Plans and Projected Performance

There are several water conservation projects underway, or being planned, that will assist the Laboratory in meeting the federal water reduction goal.

- In FY12, a total of 175 low-flow domestic faucet aerators were installed in the limited areas. Eight hundred were previously installed in restrooms and kitchens in property protected areas. The aerators provide an estimated 77% water use reduction (changing water flow from 2.2 gpm to .5 gpm), resulting in an estimated water savings of 2,200 kgals, equal to 1% of LLNL's FY12 consumption.
- LLNL's Sustainable Landscape Concept Plan augments its Landscape Architecture Master Plan and the Laboratory's landscape program to incorporate sustainability recommendations and guidelines in landscaping and irrigation practices on site. The plan provides design directions and a planting palette to future projects; the plan also identifies targets areas for lawn reduction and drought tolerant planting conversion improvements as funding allows. In FY12, LLNL installed its largest xeriscaping project to date at the West Gate Badge Office in a 20,000 SF lawn conversion.
- In FY13, if funded, LLNL will initiate a pilot project to attempt to demineralize treated well water for use as make up in its cooling towers. Currently, this treated well water is sent to the arroyo. The well water would need additional treatment by softening or other means to eliminate the possibility of doing harm to the cooling tower internals. As the percentage of water use is greatest at the cooling towers, a conversion to treated water should assist LLNL in meeting its water reduction goals. Using recycled treated well water as make-up water is estimated to save at least 5,500 kgals annually. Another plan to evaluate the use of recycled and treated well water for irrigation is being considered. The treated well water will have to be blended with potable water to ensure a non-deleterious effect to the landscaping.
- The Water Testbed Project continues to harvest rooftop rainwater at Building 471 for irrigation use in the area. Other candidate areas are being identified as funding becomes available.
- In keeping with its high standard of environmental stewardship and commitment to meeting DOE's water intensity reduction goals, LLNL is currently advancing an initiative to identify, monitor, and mitigate inefficiencies in its water distribution systems. While pursuing improved leak mitigation strategies, LLNL will also capitalize on the contributory benefits of reducing electrical energy expended in water distribution across the site that this effort will afford.

Advanced Water Leak Detection

In FY13, LLNL will initiate a project to evaluate the underground city water distribution system for leaks. A pilot project conducted early in FY13—ground penetrating, echo-location technology—successfully located a leak in the low conductivity water distribution system. The technology is non-invasive and can locate leaks within a few feet.

Another available component of advanced leak detection—sonic frequency data loggers—will also be deployed. This technology will continuously monitor LLNL's distribution system for leaks and will alert operators of any anomalies.



- LLNL's search for the most advanced and efficient leak detection technologies has created an opportunity to collaborate with industry leaders who employ the latest technological and environmentally sound methods to detect, locate, and correct leaks.
- LLNL has proactively identified the benefit of adding continuous leak detection systems, such as geophonic data-loggers, that will be integrated into future water meter projects. These devices will be integrated into the meters' communication system to remotely monitor the water distribution infrastructure and provide graphical data that will alert system operators to any leaks.

Potential projects to meet LLNL's water intensity reduction goal are shown in the "Potable Water Savings Approaches to Meet Goal" highlight in this section.

Based on LLNL's best estimate of available resources for FY13, it is estimated that water intensity savings will be 4%, with a potable water use of 238,000 kgals for the year, considering the total building area of 6,960K SF. As opportunities become available, LLNL will attempt to exceed this goal.

Resources Required

Figure 2-25 lists projects that, if funded and implemented, would allow LLNL to meet its water intensity reduction goal.

Project	Project Cost (\$M)*	Annual Savings (\$M)	Simple Payback (Yrs)	FY15 (\$M)	FY16 (\$M)	FY17 (\$M)	FY18 (\$M)	FY19 (\$M)
Plumbing Improvements - FY15	1	0.03	35.9	1	0	0	0	0
Plumbing Improvements - FY16	2	0.03	71.8	0	2	0	0	0
Plumbing Improvements - FY17	2	0.03	71.8	0	0	2	0	0
Water and Sewer Conservation Systems - install 'smart' irrigation controllers - FY16	1	0.03	29.8	0	1	0	0	0
Water and Sewer Conservation Systems, Modular Sewage Plant	9.9	0.79	12.3	0	0	3.3	3.3	3.3
Drought Tolerant Landscape FY16	2.3	0.04	56.9	0	2.3	0	0	0
Drought Tolerant Landscape FY17	1.5	0.04	37.1	0	0	1.5	0	0
Drought Tolerant Landscape FY18	0.5	0.04	12.4	0	0	0	0.5	0
Drought Tolerant Landscape FY19	1.1	0.04	27.2	0	0	0	0	1.1
TOTAL	21.3	1	19.7	1	5.3	6.8	3.8	4.4

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Figure 2-25. Proposed projects in support of SSPP Goal 4.1

Potable Water Savings Approaches to Meet Goal

Past, present, and proposed

Smart controllers, plumbing improvements and a modular sewage treatment plant or other forms of reclaimed water use are being evaluated to help LLNL meet its water intensity reduction goal.



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SSPP Goal 4.2

20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline

Performance Status

LLNL uses potable water for industrial (i.e., cooling tower make-up) and landscaping irrigation at Site 200, except at the Central Café where the water is metered, but only a negligible amount is used. At Site 300, potable well water is used for all purposes. A planned conversion from well water to Hetch-Hetchy water is near completion and may be realized in 2013.

The 20% water consumption reduction of ILA water goal does not strictly apply to LLNL since, by definition, ILA is non-potable water. However, LLNL is committed to reducing industrial use of potable water at the cooling towers and for landscape irrigation. As a subset of the water reduction savings, the portion attributable to ILA can also be tracked.

Storm Water Management

The management and control of storm water runoff quantity, timing, and water quality have become important considerations in low impact development and sustainability. Storm water management is a component of LLNL's EMS through various environmental aspects including ground water discharges, inadvertent releases, water use, and land resource use. LLNL also considers storm water management an element in water conservation and green building.

LLNL's storm water program has been designed to address regulatory requirements and DOE Orders. Storm water discharges at both Site 200 and Site 300 are regulated by the State of California under the authority of the Clean Water Act, using industrial and construction storm water National Pollutant Discharge Elimination System (NPDES) permits. The State also regulates storm water discharges under Porter-Cologne Water Quality Control Act using Waste Discharge Requirements. LLNL's storm water programs must also comply with DOE Orders, as specified in Contract DE-AC52-07NA27344. LLNL implements the storm water programs through its ES&H Manual and Storm Water Pollution Prevention Plans (SWPPP).

In December 2007, Congress enacted EISA, which established storm water runoff requirements for development and redevelopment projects. Section 438 of this Act requires all projects at federal facilities adding more than 5,000 square feet of new development or redevelopment to restore the pre-development hydrology to the maximum extent feasible. LLNL has begun to use site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow. This ensures that no adverse impacts to the site hydrology occur as a result of construction activities. In December of 2009, the U.S. EPA published the "Technical Guidance on Implementing the Storm Water Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act" (EPA Guidance), which provides recommendations for implementing low-impact development strategies for runoff control.

In addition, the state-wide Storm Water General Permit for Construction Activities 2009-0009-DWQ (Construction General Permit) was reissued by the State of California in July 2010. This permit revision added additional water balance and runoff requirements for construction designs at sites of one acre or more to protect storm water quality. Construction SWPPPs are prepared for each individual project and specify all best management practices required by the Construction General Permit.

Storm Water Management Performance Status

New construction at LLNL will include storm water controls consistent with EISA 438 and EPA Guidance to the maximum extent technically feasible.

Storm Water Management Planned Actions

LLNL continues to identify other water conservation activities, including additional rainwater harvesting projects. Consistent with EISA 438 and low impact development, LLNL is including water balance considerations into designs for the East Campus Site Improvement project. This project will include a number of low impact development designs to meet or exceed the 95th percentile storm, consistent with the EPA Guidance.

The State of California is in the process of revising the Industrial General Stormwater Permit. LLNL will apply for permit coverage under the revised permit when it is promulgated.

Storm Water Management Resources Required

As LLNL develops and redevelops areas of the site, storm water runoff will be integrated into the planning process. This may incur a 15-30% increase in landscape and runoff management costs. As significant construction or renovation is scheduled for FY13, additional resources required will be identified during the design phase.

Resources Required

Projects that, if funded and implemented, would allow LLNL to meet its ILA water consumption reduction goal are listed in Goal 4.1.

SSPP Goals 5.1 and 5.2

Divert at least 50% of non-hazardous solid waste by FY 2015

LLNL's pollution prevention (P2) efforts have been guided by the Executive Orders, and are firmly entrenched in many of its management practices. Many of the goals have been in place at LLNL and have been exceeded. Pollution prevention is a key component of LLNL's Environmental Management System, which includes training for all employees. DOE's SSPP P2 goals and a summary of LLNL's status and plans are listed below.

- Goal: Divert at least 50% of routine non-hazardous solid waste from landfill by the end of FY15.
LLNL status: LLNL consistently meets or exceeds this goal. In FY12, LLNL diverted 70%.
- Goal: Divert at least 50% of construction and demolition materials and debris by the end of FY15.
LLNL status: LLNL consistently meets or exceeds this goal. Improved tracking of construction and demolition materials and debris continues in FY13. In FY12, LLNL diverted 57%.

Performance Status

Toxic Chemical Reduction

Using a priority-based approach, LLNL addressed the chemical usage reduction requirements of EO 13514 that focused on toxic, hazardous, and GHG-contributing chemical emissions. Twenty-seven chemicals were selected as "priority" chemicals in 2008 and continue to be tracked and reported regularly (Figure 2-26).

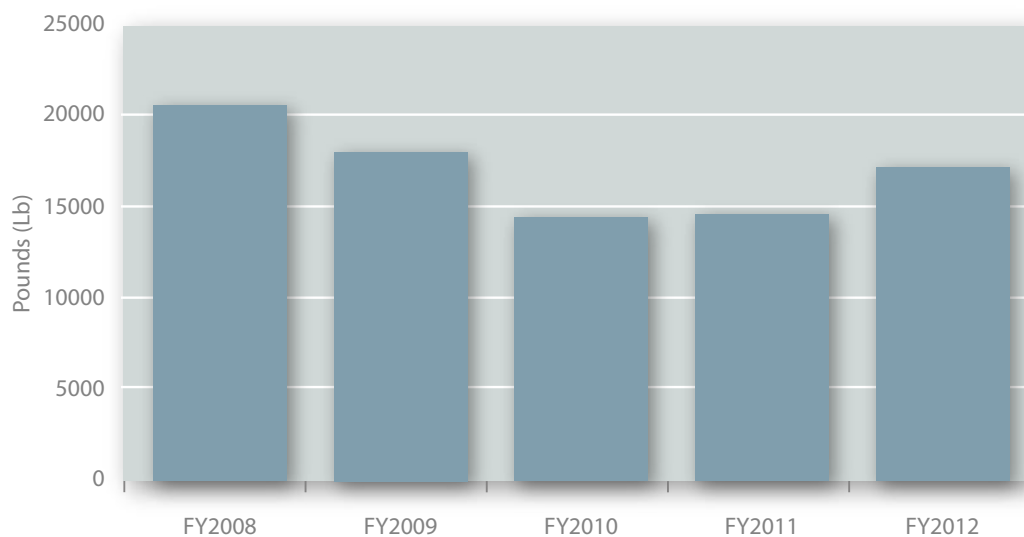


Figure 2-26. LLNL continues to track priority chemicals regularly.

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During FY12, the LLNL Chemical Management Working Group worked toward a goal of a 10% reduction of total chemical inventory, 10% reduction of gas cylinder inventory, 5% reduction of the chemical inventory over 10 years of age, or 5% reduction of gas cylinder inventory over 10 years of age. All LLNL Principle Directorates exceeded both of the legacy chemical reduction goals. In addition, LLNL completed a Targeted Legacy Chemical Inventory Pilot Process to identify and remove unneeded legacy chemicals from a major chemistry facility, Building 151, where nearly half of the substantial chemical reagent container inventory (nearly 8,000 primary containers) was identified as greater than ten years old. To initiate this effort, chemical inventory data was reviewed by the responsible line management and chemical custodians to designate legacy chemicals with no foreseeable need. P2 personnel then reviewed the identified chemicals for possible re-purposing; eighteen chemicals were identified for immediate reuse. This data was then uploaded onto newly programmed inventory tablets/scanners that flagged the designated chemicals to be removed from the facility as the Chemical Inventory Technicians performed the inventory scanning. The successful effort was well-coordinated with key stakeholders in multiple organizations, resulting in the safe removal of over 800 legacy chemicals from the facility with minimal disruption to mission activities, and distribution of 80 lbs of chemicals for reuse. LLNL intends to expand the Targeted Legacy Chemical Inventory Process in FY13.

Paper Use

LLNL continues to focus on reducing printing paper and to purchase uncoated paper containing at least 30% post-consumer fiber in accordance with EO 13514 goals; Figure 2-27 highlights LLNL's progress in reducing paper usage. The Laboratory is identifying opportunities to go paperless where ever possible.

The Managed Print Services Program (MPS) is an effort to manage business machines (i.e. copiers, printers, fax machines and scanners) to increase operational efficiency and reduce LLNL's environmental footprint. Equipment selections include environmental benefits such as double-sided (duplex) printing and PDF capabilities to reduce paper usage and use solid ink technology instead of traditional toner cartridges.

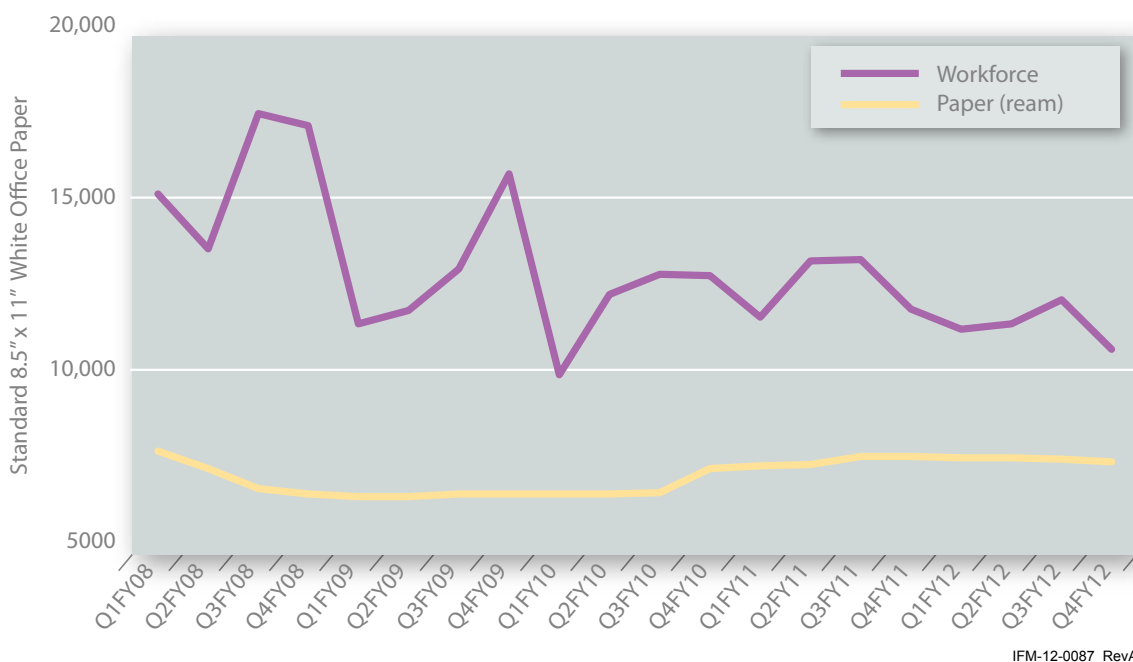
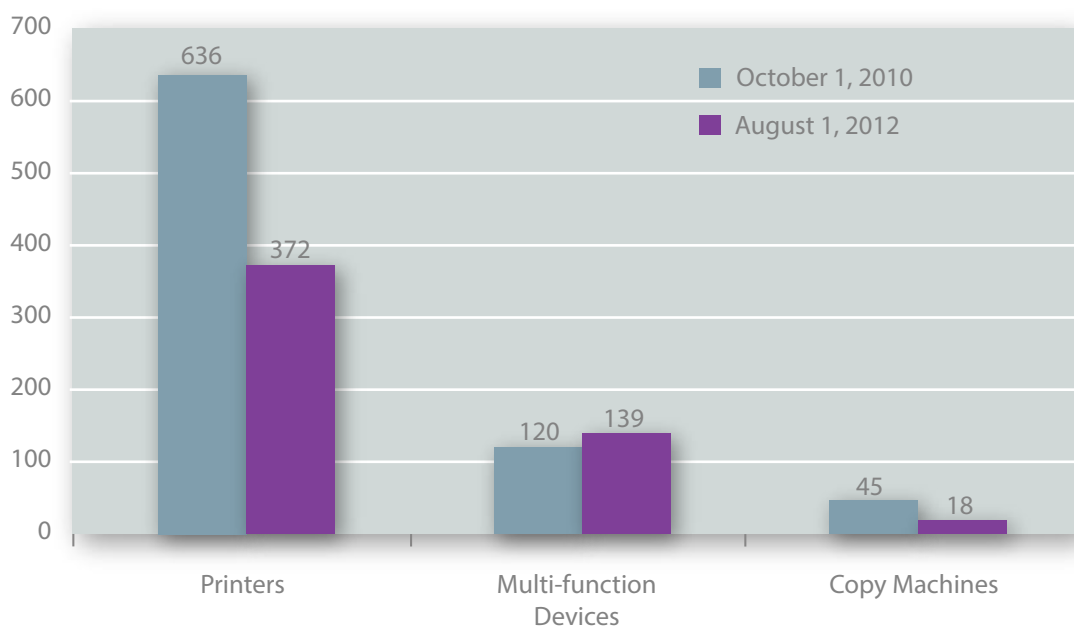


Figure 2-27. LLNL is making progress in reducing white office paper usage.

MPS has been implemented across the Operations and Business Principal Directorate (O&B). Figure 2-28 highlights the significant number of existing single-use machines that were removed consistent with the goals of MPS.

In addition to O&B, the Computations Directorate has implemented MPS and the Director's Office is in the second phase of MPS. In FY12, additional business machine assessments were completed and the organizations are working towards initial implementation.



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Figure 2-28. Implementation of MSP in O&B resulted in a 33% reduction in business machines.

Waste Minimization and Recycling

LLNL regularly exceeds the EO 13514 goal that specifies that Federal agencies divert at least 50% of routine non-hazardous solid waste, excluding construction and demolition debris, by the end of FY15. LLNL continues its comingled recycling and composting program in 15 buildings (about 30% of LLNL's population) and both on-site cafeterias. During FY12, 83 metric tons of compostable waste and 67 metric tons of comingled recycling were collected under this program.

LLNL's Environmental Restoration Department Decontamination and Demolition (D&D) team employs an assets-for-value strategy to maximize diversion of waste and material from deconstruction and demolition projects, while minimizing costs. This strategy uses the residual value of existing facilities and equipment as a partial off-set to demolition costs, and facilitates the recycling of materials from decontamination and demolition projects.

Other accomplishments in waste management include the following:

- Increasing the recyclable content of procured items
- Raising awareness through awards and outreach
- Improving tracking of construction and demolition materials and debris
- Expanding plastics recycling to include scraps from the LLNL plastics shop and recyclable plastics from other programmatic areas
- Increasing reuse opportunities

LLNL does not anticipate any changes in site population in FY13 that could impact waste generation. There is potential for several trailer removal projects that will result in demolition-related wastes. However, it is expected that much of the waste from these projects will be recyclable.

Integrated Pest Management and Landscaping Practices

An integrated pest management program has been implemented, including sustainable landscaping practices. In FY12, more than 20,000 square feet of turf were replaced with sustainable California native and drought tolerant plantings.

Materials Not Cleared for Unrestricted Release

LLNL's internal clearance of property procedure HP-FO-450 was recently revised. The revised procedure was expanded to include the release responsibilities of the environmental analysts (e.g. DOE O 458.1) and Property Management's Donation, Utilization and Sales organization, as well as those of the health physicists (10 CFR 835). In addition, an Indistinguishable from Background (IFB) process was specifically created to address the release of items from all accelerator facilities at the Livermore main site.

During the coming year, LLNL plans to review one or more known radiologically contaminated or activated locations and evaluate materials and volumes for potential release.

Plans and Projected Performance

LLNL plans to continue to reduce pollution and increase recycling during FY13 by:

- Raising awareness through awards and outreach
- Continuing to reduce high risk chemical inventory for chemicals that do not have a foreseeable mission use
- Improving tracking of construction and demolition materials and debris
- Increasing focus on reuse opportunities

Resources Required

Figure 2-29 lists projects that, if funded and implemented, would increase waste diversion and support LLNL's comingled recycling and composting program to continue to comply with local ordinance.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Site Wide Recycle/Compost Program (50% of LLNL population)	0.8	0	0	0.2	0.2	0.2	0.2
Site Wide Recycle/Compost Program (100% of LLNL population)	2.5	0	0	0.63	0.63	0.63	0.63

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Figure 2-29. Proposed projects in support of SSPP Goals 5.1 and 5.2.

Comingled Recycling and Composting Program

The Laboratory initiated a pilot Comingled Recycling and Composting Program in both Cafés and across fifteen buildings on the Livermore campus. This program has been the most requested environmental action by employees for continued improvement in the Laboratory's environmental performance. This recycling and composting initiative continues to be popular among employees, and requests to expand the program are received via the Laboratory's environmental help line green@llnl.gov. While funding issues currently limit its expansion, the Laboratory is proud of this program and hopes to see all employees participate when at the Cafés and in buildings involved in the program.



**Eat. Drink.
Wash. Repeat.**

Be part of sustainability efforts and reduce waste by purchasing a reusable container today!
Only \$4.99

Simply buy your container one time, and use it indefinitely!

Upon your next visit to the cafes after using your container, return it in a clean and rinsed condition and receive a sanitized container in exchange.

Small Choices Make a World of Difference

We've Gone Green!

Now you can find  products at the West and Central Cafeterias

  *Partnering for a Brighter Tomorrow!*

SSPP Goal 6.1

Procurements meet sustainability requirements by including necessary provisions and clauses (Sustainable/Biobased Procurements)

According to Lawrence Livermore National Security (LLNS) policy, LLNL shall ensure 95% of new contract actions, including task orders under new contracts and existing contracts, require, to the extent possible, the supply or use of products and services that are energy efficient (ENERGY STAR or FEMP-designated), water efficient, bio-based environmentally preferable (including EPEAT – registered products), non-ozone depleting, contain recycled content, or are non-toxic or less toxic alternatives; and LLNS shall update affirmative procurement plans (also known as green purchasing plans or environmentally preferable purchasing plans), policies, and programs to ensure that all federally-mandated designated products and services are included in all relevant acquisitions.

Performance Status

LLNS has implemented an Affirmative Procurement Program (APP) which ensures environmentally preferable products and services, recycled content products, and bio-based products are purchased to the maximum extent practicable and are consistent with Federal law and related procurement requirements, including EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management, and the DOE Affirmative Procurement Program Guidance. LLNS mandates these program requirements be followed as a part of the Integrated Safety Management System (ISMS) (ES&H Manual Volume III, Part 30: General Environmental Controls, Document 30.1 Managing Environmental Aspects through Pollution Prevention). Sustainable Acquisition or EPP clauses requiring subcontractors to utilize environmentally preferable products/services and recovered/recycled content are incorporated into all LLNS General Provisions (GPs) for purchase orders and subcontracts, except for the Standard Research General Provisions which apply to subcontracts awarded for basic or applied research and/or development work. To assist in complying with these requirements, LLNS continues to implement Procurement Standard Practice (SP) 23.5, Environmental Affirmative Procurement and Waste Reduction Requirements. This SP describes the requirements for acquiring environmentally preferable products and services, products with recycled content, and bio-based products, to promote cost-effective waste reduction in Laboratory subcontracts. This SP is reviewed annually to ensure all regulatory revisions, updates, and changes have been incorporated.

Sustainable Acquisition Highlights

- Electronic Product Environmental Assessment Tool (EPEAT) – 98% of all computers and monitors purchased during FY12 successfully met the EPEAT criteria.
- LLNS continues to manage sustainable Integrated Contractor Purchasing Team (ICPT) agreements with Fisher Scientific, Grainger Industrial Supply, Holman's Inc., and VWR International Scientific Products. These agreements offer special promotional pricing to the DOE Contractor Complex for environmentally preferable products.
- LLNS awarded subcontracts to suppliers who offer Department of Transportation (DOT) critical carbon steel drums made out of 15% recycled content material.
- Subcontracts were awarded to suppliers who manufacture metal waste boxes containing 22% recycled content material.
- Computer supplier subcontractors were asked by LLNS to include EPEAT rating descriptions fields on their websites.

- The Supply Chain Management Department (SCM) continues to require the major suppliers of desktops, laptops, and computer monitors to issue EPEAT reports on a quarterly basis directly to the Pollution Prevention/Sustainability Program Manager and the Contract Administrator. Receiving detailed reports more frequently throughout the fiscal year assists the Environmental Functional Area (EFA) in analyzing and projecting the total EPEAT buys for the year.
- Additional recycled products were added to The Office City's catalog. Items added were Kleenex facial tissues comprised of 20% recycled content and Kimwipes containing 40% post-consumer fibers.
- SCM is working with The Office City to have them provide a punchout list that identifies recycled content items to its customers.
- In FY13, SCM will include quarterly reporting requirements in a new subcontract being awarded for multi-function devices (copiers/printers).
- SCM received an award for their participation in the hydrogen shuttle bus collaborative project. The project consisted of integrating two hydrogen buses into the LLNL taxi fleet used to transport employees on-site. The introduction of these vehicles reduced the use of traditional diesel-powered buses which lead to an approximate savings of 8,000 kg of carbon dioxide equivalent greenhouse gas emissions.
- SCM established Environmentally Responsible Conduct goals to measure if daily activities performed by departmental personnel could be conducted in an environmentally responsible manner. The goals consisted of the following:
 1. Decrease electricity usage in Building 551W by 5%.
 2. Increase the amount of double sided printing by 25%.
 3. Reduce the amount of paper being used in printers located in Building 551W by decreasing the number of copies being printed each month by 2%.
 4. Decrease the amount of styrofoam peanuts purchased during the fiscal year by 2%.
 5. Provide information concerning EPP to SCM Contract Administrators for consideration.
 6. Complete the 'Green Team' website.

As of October 1, 2012, SCM met or exceeded all of the goals except for the double-sided printing goal (number 2, above).

Plans and Projected Performance

LLNS will continue to support the purchase of environmentally preferable products and services, recycled content products, and bio-based products, to the maximum extent practicable, by ensuring the clauses identified in the General Provisions are included in all purchase orders and subcontracts.

LLNS will also continue to review and update Standard Practice 23.5 in accordance with LLNL's prime contract requirements.

Resources Required

Administrative resources are required to ensure green-related clauses/articles are incorporated into purchase order and subcontract pro-forma documents and to update standard practices, as required. An exact amount of administrative time needed to conduct these activities cannot be calculated as the volume of regulatory requirements requiring revisions to these documents is unknown.

LLNL Wins DOE Green Buy Gold

DOE's new voluntary incentive program was created to encourage sites to track and report on programs that successfully purchase sustainable products. This new award recognizes many data providers that supply information to the P2S program to facilitate awards such as this.

Of the 31 sites that competed, LLNL was one of three Gold winners. Gold is the highest level award, and LLNL received it the first time out.



SSPP Goal 7.1

All data centers are metered to measure a monthly Power Utilization Effectiveness (PUE) of 100% by FY 2015

Performance Status

LLNL has identified 58 data centers that meet the criteria to be classified as data centers that are to be metered by FY15. Only 3% of these data centers have a means of measuring PUE monthly through metering, the remaining have a calculated PUE. Instead of proposing metering all 58 centers, LLNL proposes to first focus on consolidation efforts across the site and then to only propose metering projects on the remaining enduring data centers.

Plans and Projected Performance

In addition to the data centers that are currently metered, HPC at LLNL has identified that power management is critical to the success of energy management in HPC. The solution has been to implement a centralized system of real time data, from the rack to the entire site, to achieve power management. LLNL is creating an operational, event, and real-time data management infrastructure of all external and internal data sources. This requires overcoming challenges: understanding how different types of hardware and software impact power utilization, correlating multiple types of data sources, coordinating with multiple owners of the data, accessing the data, selecting the best interface, comparing and viewing the data on a common platform, and creating various dashboards. Upon completion, this can be leveraged to all LLNL data centers.

Metering projects will be developed where data is calculated to allow for improvements.

Resources Required

Based on the enduring data centers, LLNL estimates that a minimum of \$3–5M of infrastructure investments is needed in order to meet the requirement to fully meter all data centers at LLNL once consolidation is complete. Until funding can be secured, LLNL will continue to calculate PUE on an annual basis to evaluate energy intensity. LLNL will continue to benchmark and model enduring facilities as was performed at Building 112 in SSPP Goal 7.2.

SSPP Goal 7.2

Maximum annual weighted average PUE of 1.4 by FY 2015

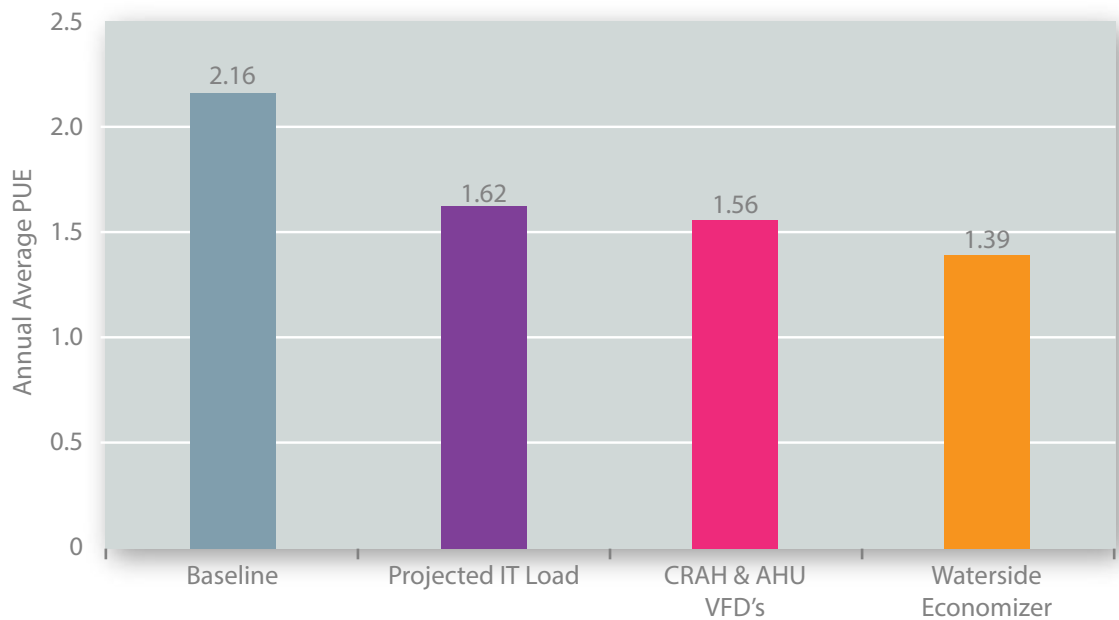
Performance Status

The two primary objectives of electronic stewardship are server consolidation and server virtualization. LLNL continues to collocate services into the Building 112 EDC. The goal is to collocate server and storage equipment in the EDC facility and shut down the over-subscribed remote server rooms, thus reducing the electrical, mechanical, and maintenance costs to support these facilities. LLNL is estimating a \$5M cost reduction to the total cost of ownership when the consolidation and virtualization of approximately 800 servers has been completed.

During FY12, LLNL partnered with DOE Office of Chief Information Officer Green Information Technology (IT) Program and Lawrence Berkeley National Laboratory (LBNL) to preview data center energy modeling tools which create an energy model of existing data center power and cooling parameters to evaluate optimization scenarios. Building 112 was selected to evaluate optimization scenarios, investigate efficiency improvements, improve operational set points, make building improvements and identify consolidations. The detailed study indicated three areas of focus to improve overall PUE. These focus areas are to increase the IT load through additional consolidations, install variable speed fans and controls on air handling equipment, and add waterside economization with elevated water temperatures. Figure 2-30 shows the baseline PUE and the reduction in PUE by performing the initiatives from the study. The PUE reduces incrementally from the baseline when the projects are implemented.

The largest reduction in PUE is realized from the consolidation into Building 112 and increasing the IT load. The payback of this initiative is immediate while the second two projects require an investment of \$2M with a payback up to eight years.

The balance of LLNL data centers that will not be consolidated into other spaces will be entered into the Data



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Figure 2-30. PUE reduction when projects from study are implemented.

Center Energy Profiler (DC Pro) and data center models will be created to continue to identify the next series of energy-efficient measures. Operational best practices for data centers as outlined in American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) TC 9.9.

For LLNL, data centers use ASHRAE TC 9.9 best practices:

- Raised set points of computer room air conditioners (CRACs) and computer room air handlers
- Sealed and cleaned subfloor area and removed all unneeded obstructions
- Installed chimneys on all CRAC units to reduce short cycling and improve HVAC efficiency
- Monitored, adjusted, and balanced HVAC systems to efficiently support information technology devices within acceptable ASHRAE and manufacturing guidelines
- Used temperature recording devices and infrared imaging to identify and trend HVAC aberrations as well as to confirm remediation
- Relocated CRACs to improve efficiency
- Arranged enclosures and racks in hot and cold aisle configuration
- Used blanking panels in enclosures to reduce short cycling
- Used cabling grommets to transition and seal cutouts on computer tiles
- Installed flexible strip curtains or doors at end of aisle to reduce short cycling
- Use appropriate diffusers or floor tiles
- Position supply and returns to minimize mixing and short cycling
- Raise the access floor height to increase air volume and static pressure

Since HPC computational efficiency is an ongoing contribution to mission excellence, LLNL is researching and developing techniques to improve the energy efficiency of HPC, which is highly energy intensive. LLNL is involved in a number of efforts that not only aim to reduce the energy use of HPC, but to promote new standards of quantifying efficiency gains beyond gross energy use. LLNL aims to drive the DOE complex to adopt these approaches to use computational efficiency as a viable alternative to measuring advances in HPC sustainable stewardship.

Advanced energy-efficient computing requires revising the techniques of parallel processing, where multiple processors run at once to solve a problem. *Efficient* computing necessitates that individual processors work to their optimal efficiency for the task at hand; some would need to be powered down if they were not needed or if their complimentary processors were not yet done with their tasks. This is a departure from the traditional parallel computing perspective.

Sequoia “Tops” Lists

Sequoia in top ten of the Top Green 500 list

The purpose of the Green 500 is to provide a ranking of the most energy-efficient supercomputers in the world. In the past, performance has been synonymous with speed as measured in Flops. This focus has led to the development of supercomputers that consume large amounts of electrical power, and that produce a lot of heat that requires an enormous cooling infrastructure to ensure proper operation. In addition, the emphasis on speed as the ultimate metric has caused other metrics such as reliability, availability, and usability to be largely ignored.



Sequoia is second on TOP500 list



LLNL has been advancing High Performance Computing (HPC) at the TSF in the both the facility and in the computer systems. For the first time since November 2009, a United States supercomputer sits in the second spot of the TOP500 list of the world's top supercomputers.

Sequoia, the IBM BlueGene/Q system achieved 16.32 petaflop/s on the Linpack benchmark using 1,572,864 cores in June 2012.

Plans and Projected Performance

The goal for FY13 to FY15 will be to continue to consolidate in Building 112 to improve LLNL's overall PUE. In addition, the results of this study will be presented during FY13 at the Silicon Valley Leadership Group's 5th Annual Data Center Efficiency Summit in partnership with the California Energy Commission and LBNL. With the completion of the FY12 infrastructure build-out of the north side of the Building 112 EDC. Completion of the north side will position the EDC to house legacy end-user equipment using LLNL's "roll your own" rack service model. This new service enables the ability to expedite the consolidation efforts while reducing the footprint of the infrastructure. The goal is to stand up a world class institutional infrastructure that meets all the needs across the Laboratory.

All enduring data centers will be benchmarked and modeled to identify efficiencies to provide improved PUE.

LLNL will continue to optimize the efficiency of HPC with the new Sequoia platform, which was deployed in 2012. LLNL will utilize a combination of liquid-cooling and air-cooling techniques for installation of Sequoia with over 90% of the machine being liquid cooled.

LLNL is heavily involved in the Energy Efficiency HPC Working Group, which participates in many HPC events. One such event is the upcoming DOE HPC Power Management Best Practices Workshop where HPC challenges and best practices are identified. The Energy Efficiency HPC Working Group meets monthly and is comprised of nearly 100 contributing members from the HPC industry, including national laboratories, universities, and vendors. This working group is also working with the Green Top 500 list to develop the required metering to attain standardized energy levels during Linpack runs. As part of its ongoing contributions to mission excellence, LLNL is researching and developing techniques to improve the energy efficiency of HPC, a highly energy intensive resource. LLNL is involved in a number of efforts that not only aim to reduce the energy use of HPC, but promote new standards of quantifying efficiency gains beyond gross energy use. LLNL aims to drive the DOE complex to adopt these approaches to use computational efficiency as a viable alternative to measuring advances in HPC sustainable stewardship.

Resources Required

Figure 2-31 lists projects that, if funded and implemented, would allow LLNL to meet its PUE goal.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Data Center Efficiency, Virtual Servers	0.5	0.41	1.2	0.5	0	0	0
B453 Terascale Free Cooling	5.5	0.72	7.6	0	2.75	2.75	0
B451 Free Cooling	3	0.36	8.3	0	1.5	1.5	0
B112 Free Cooling	3	0.36	8.3	0	1.5	1.5	0
Data Center Building	10	0.72	13.8	0	10	0	0
Server Consolidation	3	0.72	4.2	1	1	1	0
TOTAL	25	3.30	7.6	1.50	16.75	6.75	0

IFM-12-0060_RevA

Figure 2-31. Proposed projects in support of SSPP Goal 7.2.

HPC Innovation Center Receives Best-in-Class Award in the Integrative Planning and Design Category

The LLNL High Performance Computing Innovation Center (HPCIC) serves as an example of program and facility development with a focus on environmental stewardship.

This facility is one of the first in the LVOC area, where researchers are active within a wide range of science domains including climate modeling and computational energy. Consistent with programmatic goals, the facility was designed with the environment in mind.

Site design includes the first permeable pavement used at LLNL, and native vegetation to limit water consumption. The facility itself was constructed from refurbished trailers at a cost savings of \$200,000, and a waste generation avoidance of 85 tons. Finally, the trailers were oriented to reduce heat build-up during long summer days and to share use of existing curb cuts and roadway.




SSPP Goal 7.3

Electronic stewardship — 100% of eligible PCs, laptops, and monitors with power management actively implemented and in use by FY 2012

Performance Status

LLNL has made significant progress during FY12 to improve and automate electronic stewardship of its personal computing environment and has completed its FY12 Desktop/Laptop Power Manager Project ahead of schedule. Power management has been actively implemented and is in use on all eligible PCs, laptops, and monitors. Figure 2-32 shows the estimated annual savings LLNL will see from the implemented power management.



	Energy Saved (kWh)	Dollars Saved	Pollution Prevented CO ₂ (tons)
Savings from monitors going into sleep mode	706K	\$42K	1,625
Savings from desktops going into CPU throttle mode	1,502K	\$90K	3,459
Total Savings	2,208K	\$132K	5,084

IFM-12-0063_RevA

Figure 2-32. Annual savings estimate to be achieved from PC, laptop, and monitor power management.

Plans and Projected Performance

LLNL will continue its power management on all eligible PCs, laptops, and monitors. As computers are replaced, new systems will automatically be included in the power management program.

Funding Strategy

Figure 2-33 lists projects that, if funded and implemented, would allow LLNL to meet its electronic stewardship goal.

Project	Project Cost (\$M)	Annual Savings (\$M)	Simple Payback (Yrs)	FY13 (\$M)	FY14 (\$M)	FY15 (\$M)	FY16 (\$M)
Macintosh Power Management	0.15	0.013	12	0.15	0	0	0
TOTAL	0.15	0.013	12	0.15	0	0	0

IFM-12-0061_RevA

Figure 2-33. Proposed projects in support of SSPP Goal 7.3.

SSPP Goal 2.8

Regional and local planning

Executive Order 13514 instructs federal agencies including DOE to meet the following regional and local planning goals:

- Participate in regional transportation planning, recognition of existing community transportation infrastructure, and incorporation of such efforts into site policy and guidance documents.
- Ensure planning for new federal facilities or new leases includes consideration of sites that are pedestrian friendly, near existing employment centers, and accessible to public transit, and emphasize existing central cities and, in rural communities, existing or planned town centers.
- Identify and analyze impacts from energy usage and alternative energy sources in all Environmental Impact Statements and Environmental Assessments for proposals for new or expanded federal facilities under the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.).
- Coordinate with regional programs for federal, state, tribal, and local ecosystem, watershed, and environmental management.
- Identify regional transportation planning, ecosystem, watershed, and environmental management initiatives affecting sites and opportunities to work with local authorities to align energy policies and siting of renewable energy infrastructure.
- Increase interaction of principles for sustainability Federal Location Decision into the agency site selection and lease procurement procedures.

Local Planning Coordination

LLNL maintains very good relationships with local community planning and government groups, including the cities of Livermore and Tracy, as well as the counties of Alameda, Contra Costa, and San Joaquin. Interactions include frequent meetings with City of Livermore planners to discuss the LVOC proposal, discussions with water officials in Livermore to discuss wastewater issues, and participation in stakeholder groups to discuss environmental issues.

In May 2011, the City of Livermore annexed land that includes the LLNL and the adjacent SNL/CA sites with unanimous vote of the City Council, bringing into the city's border 1,022 acres east of Vasco Road, south of Patterson Pass Road and west of Greenville Road. Included is a 1,017-acre area occupied by Sandia California and LLNL, two privately owned parcels totaling five acres and a Greenville Road right-of-way.

With the annexation, the urban growth boundary alignment provides clarity and direction in the implementation of city policies. It would also facilitate to enhance a sustainable community through collaboration with the Laboratory on R&D programs and the agencies and organizations in the East Bay to build ground-breaking partnerships between the labs, academia and the private sector around green transportation technology. The initiative is expected to foster the creation of more than 5,000 jobs and have a fiscal effect of more than \$1B in the region over the next five years. Development of housing and neighborhood expect to follow.

LLNL Staff is also assisting the City of Livermore to develop their Climate Action Plan and will share site success in GHG reduction as local best practice.

Transportation

The Laboratory recognizes the existing community transportation infrastructure and works with multiple local and state agencies on transportation planning, providing input on the selection of future Livermore stations served by regional Bay Area Rapid Transit (BART), and promoting public transit commuting ridership. Such collaborative planning allows the Laboratory to develop anticipated needs of providing appropriate internal means for commuters to connect easily with public transit. The Laboratory's on-site shuttle schedule aligns with the local transit service (Wheels), connecting commute routes to the ACE Train Station, Livermore downtown transit center, and Dublin BART station.

The bicycle remains a popular seasonal method of commuting with increasing awareness of personal fitness and energy conservation, and as more housing has developed close to LLNL. Local bike lanes lead directly onto the Laboratory site; the Bay Area weather and the relatively flat site terrain also contribute to the bicycle and walking as major modes of internal travel on-site.

As a major employer in the community, the Laboratory is committed to supporting commuters using alternate modes of transportation from the single-occupant vehicle by providing certain on-site conveniences and to promote energy conservation:

- Permitting access for vanpools to route through limited areas.
- Maintaining a database to facilitate rideshare and vanpool matching.
- Providing preferential parking spaces for vanpool vehicles.
- Offering free bicycle safety helmets to on-site riders and bicycle commuters.
- Providing on-site taxi shuttle service.

Plans and Projected Performance

Sustainable site development encompasses an integrated approach to the planning of future on-site facilities and infrastructure, consistent with the LLNL Twenty-Five Year Site Plan (TYSP), striving for good site stewardship and integration with the surrounding community. The Laboratory encourages walking and bicycling as means of travel within the site; long-range site development envisions continuous improvement of a bicycle- and pedestrian-friendly environment.

- Future facilities development will be physically scaled and organized to maximize the potential of walking and bicycling on site: quick trips on foot typically measure about one quarter mile, while the typical bicycling distance is about one-half mile.
- Sidewalks and landscaped pathways will provide safe and direct travel for pedestrians segregated from vehicle traffic; bicycle travel is accommodated by bike lanes or shared-use pathways wherever feasible.
- LLNL supplies and maintains approximately 600 unassigned bicycles for employees use on site; riders can leave bicycles at destinations; bicycles are redistributed daily around the site.
- On-site taxi shuttle stop locations will be planned to be within a quarter mile radius from major on-site destinations.
- LLNL continues to pursue civil improvement projects to expand the site-wide integrated pathway network for pedestrians and bicycles, providing landscaped linkages between major destinations. LLNL's approach to landscaping is to strive for a campus-like environment and be responsive to a sustainable design appropriate for the location and function.

Other aspects of site planning at the Laboratory are coordinated with DOE/NNSA's National Environmental Policy Act (NEPA) process and LEED project guidelines. The LLNL Environmental Management Program addresses environmentally sensitive areas, storm water retention, alternate irrigation water sources, and land use provisions to accommodate activities ranging from recreation to recycling of materials.

Energy

LLNL supported DOE/NNSA in preparing a Supplement Analysis under the NEPA for the five-year review of the Site-Wide Environmental Impact Statement (SWEIS) for Continued Operations of LLNL. Environmental impacts from ongoing operations and new or modified projects or modifications in site operations were analyzed, as well as cumulative impacts in utilities and energy use.

Renewable Energy

An LSO/LLNL project team has developed a draft solicitation notice for the installation of a ten-acre 2-4MW ground mounted solar PV system, and is working with the National Renewable Energy Laboratory and Western Area Power Administration. The current project schedule indicates that construction could begin in Q2/Q3 of FY13.

Environmental Management

LLNL participates in the following regional stakeholder groups for regional ecosystem/environmental management projects:

Stakeholder Group Member: Altamont Pass Wind Resources Area Project

Involves participation as a regional/local stakeholder with the development of a Conservation Plan (a joint Natural Community Conservation Plan and Habitat Conservation Plan) for the Altamont Pass Wind Resources Area Project (wind energy development). This plan is being developed to minimize impacts to birds caused by wind turbine operations and conserve birds and other terrestrial species while allowing wind energy development and operations in the Altamont Pass Wind Resources Area Project.

Stakeholder Group Member: East Alameda County Stakeholder Group

Involves participation as a regional/local stakeholder in the development of a Conservation Strategy for East Alameda County for long-term habitat protection and endangered species conservation.

Large-Flowered Fiddleneck Restoration

The large-flowered fiddleneck is a federally listed endangered species with an extremely limited distribution. Only two native populations of this species are known to occur; one population is located at LLNL's Site 300, and the second is located on nearby private land. Two introduced experimental populations (one at Site 300 and a second on property owned by the East Bay Regional Parks) are also maintained by occasional seed bank enhancement. LLNL participates in regional large-flowered fiddleneck recovery efforts including efforts to maintain the experimental populations and research on the effects of fire frequency on large-flowered fiddleneck abundance.

SSPP Goal 8

Innovation and government-wide support

Innovative Ways in Which R&D Technologies are being Deployed in Support of Sustainability

LLNL integrates research and development with site-level sustainability support through innovative projects that take advantage of on-site scientific expertise. Some examples of internal vested projects include:

- **Building Energy Efficiency.** Scientists have used statistical techniques to assist site energy managers to better identify and describe individual building energy use, as well as site-wide energy use. This has resulted in the identification of the appropriate data to use, and a consolidation of the energy and weather data streams for the site.
- **Modeling of Site Electrical Grid.** Scientists have deployed electrical grid software to simulate the flow of electricity throughout the site. These tools are being evaluated to generate scenario-based planning exercises for improved electrical load management.
- **Simulating LVOC-CC.** The new computer center in the LVOC was chosen as the focus of energy efficiency/ building energy modeling testing. For this project, over 51,000 simulations of “Energy Plus,” a building simulation program, were run to explore the impacts of design, equipment, and operation choices. As a result, the impacts of insulation and chiller efficiency were enumerated, providing energy and cost-saving solutions.
- **Investigations of outages.** To support the investigation of short-term electrical outages, LLNL data scientists examined multiple data streams of an electrical incident at TSF. As a result, it became evident that TSF would benefit from increased resolution in electrical performance metering to enable outage forensics.
- **Renewable Energy.** Climate and weather scientists have garnered internal funding to identify the potential for using the site as a test bed for renewable energy research. Lab scientists have given input to the RFI process to request data from the solar array can be collected for scientific research.
- **SF₆ reduction.** Leadership from the S&T areas, with expertise in molecular accelerators, have identified a design for an SF₆-free accelerator that would still contribute to LLNL’s scientific and mission goals.

Waste Management and Site Remediation

Comingled Recycling

The Laboratory initiated a pilot Comingled Recycling and Composting Program in both Cafés and across fifteen buildings on the Livermore campus. This program has been the most requested environmental action by employees for continued improvement in the Laboratory’s environmental performance. This recycling and composting initiative continues to be popular among employees and requests to expand the program are received in the Laboratory’s environmental help line green@llnl.gov. While funding issues currently limit its expansion, the Laboratory is proud of this program and hopes to see all employees participate when at the Cafés and in buildings involved in the program.

Sustainability Successes in Environmental Restoration

Since beginning the environmental restoration activities at the two LLNL sites under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) in the 1980s, a broad spectrum of environmental remediation technologies have been and continue to be tested and applied to clean up soil and groundwater contamination as efficiently and effectively as possible. As a result of this work, there have been both direct and indirect contributions towards site sustainability practices.

With the overall cleanup objective of protecting human health and the environment, there are a number of criteria in regulatory guidance documents that must be considered in selecting remedies, including:

1. Overall protection of human health and the environment.
2. Compliance with applicable, or relevant and appropriate, requirements.
3. Long-term effectiveness and permanence.
4. Reduction in toxicity, mobility, and volume through treatment.
5. Short-term effectiveness.
6. Implementability.
7. Cost.
8. State acceptance.
9. Community acceptance.

Where possible, remedies are selected that are relatively simple to implement and maintain, require less energy to support, and generate less waste. For instance, in certain situations ‘monitoring only’ has been selected as an appropriate remedy as the contaminants in question (e.g., tritium) have been shown to naturally attenuate without posing unacceptable risks. In other cases, subsurface conditions are being enhanced to promote in situ destruction of volatile organic compounds (VOCs). Bioremediation of VOCs in the subsurface is currently being tested at both LLNL sites and preliminary results are showing promise. Another approach involves injection of zero valent iron (ZVI) into the subsurface via mechanical fracturing technology. In this application, contaminants in groundwater will come into contact and react with the emplaced ZVI as the groundwater follows its normal flow pattern thereby decomposing to less toxic compounds. This work is planned for FY13. Although there is an up-front investment into setting up in situ remedies, over time there is less energy required and less waste generated while treating contamination to acceptable standards.

An indirect benefit of the environmental remediation work is the availability of treated pumped groundwater that is permitted to be discharged to surface storm drains that may be diverted for irrigation needs or other possible industrial uses (e.g., cooling tower make-up water) and thereby reducing the reliance on the municipal water supply.

Innovative green cleaning at NIF Receives NNSA Pollution Prevention Award

LLNL's National Ignition Facility (NIF)—home to the world's largest laser—houses 192 precision aligned laser beams in two bays under tight, environmentally controlled conditions. Extreme cleanliness is required as any bit of debris, oil or other wayward material could cause the laser light to damage the optics.

The NIF Class 10,000 clean room environment maintained throughout the facility is the same level of cleanliness you might find in a hospital operating theatre, permitting no more than 10,000 particles larger than 0.5 microns per cubic foot of air. Custodial operations in this huge environment require a talented and innovative crew. Leading that crew is Dexter Lenoir, who has made significant changes in both cleaning products and methods, which have resulted in improved worker health and safety as well as reduced environmental impacts from custodial operations.



Employee using the steam cleaner/mop.



Employee using the riding hepa vacuum cleaner.

Government-and Industry-wide support

LLNL has supported stakeholders and government missions in a number of ways; both through long-term large scale science initiatives, and smaller scale projects, described in the section below.

Large, High-Impact Research and Development

LLNL has been pursuing research that contributes to fundamental changes in energy generation and planning, and GHG management. These innovations will be realized in the next 10-30 years, with significant impacts.

Laser Inertial Fusion Engine (LIFE)

LIFE is a game-changing technology to provide sustainable, carbon-free energy and could be applied to drastically shrink inventories of nuclear waste. After fusion ignition and burn at NIF, an aggressive research and development program will be needed to make a number of critical but achievable technological advances. Collaborations will involve national laboratories and academia as well as industry and, ultimately, power providers. The DOE has called for the establishment of a National Academy of Science and Engineering committee to study and recommend next steps for such a national program.

Regional climate change prediction and analysis

Building on the Program for Climate Model Diagnosis and Inter-comparison (PCMDI), LLNL will provide technical leadership in reducing uncertainties and improving predictive capabilities of next-generation climate models. Initial focus is on identifying key processes and parameters through uncertainty quantification (UQ). Efforts also build on climate simulation analysis for regional predictions of climate impacts critical to national security.

Greenhouse gas emission verification

The goal of GHG emission verification activities is to become the leader in monitoring and verifying carbon emission reductions for international climate agreements. Efforts will build on the expertise of National Atmospheric Release Center (NARAC) in atmospheric transport and identification of emission sources, and the capabilities of the CAMS in radiocarbon analysis for attribution of anthropogenic carbon emissions. Currently, LLNL is partnering with DOE, the National Aeronautics and Space Administration, and the National Oceanic and Atmospheric Administration on a Greenhouse Gas Information System.

Underground Coal Gasification and Carbon Capture and Sequestration

Capabilities in simulation of Underground Coal Gasification (UCG) processes, reactive transport modeling, geophysical and geochemical monitoring, and geophysical experimentation and success working with industrial partners support the goal of being a national technology leader for UCG and supporting Carbon Capture and Sequestration (CCS) deployment. The objective is to accelerate efficient and sustainable deployment of UCG and CCS while reducing the cost of CCS by 30%. LLNL is currently applying its subsurface simulation and monitoring expertise to large pilot UCG and CCS experiments run by industry and DOE, including international efforts in China and elsewhere.

Short-Term Scientific Advancement

LLNL R&D also focuses on short-term scientific advancement of topics that promote more sustainable energy systems and specific technology deployment.

Wind Power Prediction

The goal of wind power prediction activities is to be the national provider for wind-energy forecasts and simulation, including critical boundary-layer physics, to expand efficient wind energy deployment. Efforts will build on NARAC capabilities to model highly resolved wind flows and turbulence over complex terrain to increase output of existing wind farms and extend life cycles of wind turbines. LLNL is pursuing the development of an energy field experimental laboratory at Site 300 and a National Wind Prediction Center with industrial and academic partners.

Air Capture and Negative Emissions

The Air Capture and Negative Emissions Program strategy is to develop catalyst technology systems to directly remove and sequester atmospheric CO₂. The approach combines capabilities in computational design, laboratory synthesis, and experimental testing of catalysts with system analysis, including geologic sequestration, with a goal of deployed and air capture systems that are cost effective.

Advanced Transportation Research

LLNL is pursuing multiple tracks in advancing state-of-the-art transportation by significantly improving the fuel economy of class 1–8 vehicles (heavy-duty trucks) through introducing advanced concepts/designs, simulations, validation experiments, track, and on-the-road tests. The research aims to provide low- or zero-carbon solutions for class 1–4, and improve aerodynamics and engine design for class 5–8. These efforts have been carried out in partnership with industry through DOE funding.

Building Energy Efficiency Simulation

LLNL is a partner of the DOE Energy Efficient Building (EEB) Hub, located in Philadelphia, focusing on deploying tools and approaches to improve the efficiency of existing buildings. LLNL will bring a new approach to model integrated cyber-physical control systems and then develop methodologies to create a scalable reduced order model that can be rapidly transitioned to commercial deployment. LLNL is also assisting in the EEB Hub management, to ensure the project's success.

Energy Systems Simulation

LLNL is further extending its scientific, engineering and computational expertise to help businesses in the energy domain. First, LLNL has been assisting the California Investor Owned Utilities (IOUs) in their proposal to the California Public Utilities Commission, called the “California Energy Systems for the 21st Century Project” (known as CES-21). CES-21 will enable LLNL staff and computing capabilities to be used by the IOUs in their quest to better monitor, plan, and understand the current electrical grid and gas system, as well as plan for a low-carbon future.

LLNL has also developed a competition for private companies to access its computing resources to improve energy technology. Called the “HPC4Energy Incubator,” this novel approach has resulted in six private companies working with LLNL staff to advance their computing capabilities via HPC. By using HPC, these firms could speed the development and analysis of their green energy products, and help their success.

Hydrogen Shuttle Bus Collaborative Project Receives NNSA Pollution Prevention Award

In FY11, LLNL and SNL/CA collaborated on a DOE supported program to demonstrate the use of hydrogen-powered vehicles. This program was administered by the Office of Energy Efficiency and Renewable Energy's Fuel Cell Technologies Program, and supported the early market adoption of these technologies. Two hydrogen buses, one a 12-passenger and a second 8-passenger with wheel chair capability, were integrated into the LLNL taxi fleet used to transport employees at both the LLNL and SNL/CA laboratories.

The hydrogen buses reduced the use of traditional diesel-powered buses onsite and were among the most heavily used in the DOE bus demonstration program, logging a combined 7,561 miles. This translated into a savings of approximately 8,000 kg of CO₂ equivalent greenhouse gas emissions in comparison to diesel-powered buses. These vehicles achieve near-zero regulated emissions (below Super Ultra Low Emission Vehicle regulations for oxides of nitrogen) and no CO₂ emissions.

In addition to use as employee shuttles on and off campus, the buses also were showcased throughout the local community to help raise public awareness of the benefits and safety of hydrogen technologies.



Sustainability Communication Plan

Fostering sustainable practices at LLNL is based on creating culture change. LLNL employees intrinsically understand that sustainability is crucial for us, and future generations to which will be left the nation and planet. Sustainability means many different things to LLNL employees, including:

- Reducing fossil fuel use and dependency on foreign oil
- Reducing greenhouse gases (carbon footprint)
- Water conservation
- Pollution prevention
- Decreasing electricity demands
- Waste management and recycling
- Purchasing green products
- Reducing total energy costs

It is the mission of the Sustainability Communications Plan to make all employees aware of what they can do to help. LLNL has been communicating the “sustainability message” to employees for many years through Newsline articles, posters, and through “walk the talk” actions. In August 2011, the Sustainability Communications Plan was formalized and efforts were united by creating an interdirector committee to enhance and standardize the sustainability message to employees. This is a top-down leadership approach that relies on acceptance and contribution at all levels.

There were several notable communications achievements in FY12 which have made all employees more aware of LLNL’s past sustainability accomplishments and future goals. Recent activities included:

- An LLNL Director’s column in Newsline
- Ongoing updates to LabBook, LLNL’s social networking site, about sustainability.
- Additional training for site energy and water managers to identify and communicate awareness of resource usage
- Monthly sustainability updates at the Monthly Performance Review manager forum by LLNL’s Operations & Business Principal Associate Director

LLNL will expand these efforts in FY13. Future efforts will include additional Newsline articles, updating and further distribution of the Sustainability Pocket Guide, preparing a short video for LLNL employees and visitors, and additional educational activities.

The Sustainability Communication Plan encourages employees to:

- Turn off lights and equipment when feasible
- Stop use of space heaters and fans
- Use less water
- Telecommute and use alternative schedules
- Carpool, use public transportation, walk, and bike
- Refrain from printing or print double-sided only
- Teleconference or videoconference rather than travel
- Reduce, reuse, and recycle
- Increase ‘green’ purchasing
- Look for new ideas on how to further reduce the Lab’s total energy use

Training to increase awareness and encourage behavior change

Recognizing the impacts of climate change and resource constraints on future generations, LLNL is educating its leaders and its energy, water, and facility managers on the importance of promoting sustainability and behavioral change. The communication section in this plan has more information on sustainability training and raising awareness of LLNL employees.

Fresh@ the Labs Receives NNSA Pollution Prevention Award

People worldwide are rediscovering the many benefits of buying local food. LLNL and SNL/CA partnered to bring these benefits directly to the Laboratory communities with Fresh @ the Labs, a Farmers Market program.

The Farmers Market, held on the fourth Tuesday of the month from July 2011 through October 2011, was a highly successful partnership between the two labs that promoted community collaboration, employee health, a life convenience, and environmental sustainability. The LLNL and SNL/CA pilot saw more than 2,000 attendees interacting with twenty Bay Area vendors to purchase fresh and local fruits and vegetables, nuts and grains, flowers, eco bags, and more. Adding to the festive experience were gourmet lunch vendors, cooking demonstrations, and live music.





LLNL is addressing climate change and climate change adaptation both internally for the site, and externally for its stakeholders. Internally, LLNL has incorporated climate change adaptation planning as a part of its status as an NNSA lab, with services and equipment critical to the security of the nation. These capabilities, including the NARAC, the Biodefense Knowledge Center, and NIF, necessitate resilience with respect to extreme weather events, changes in heat and precipitation, and sea level. For its external stakeholders, LLNL views assistance in planning for climate change adaptation as a part of its mission, “to ensure the safety and security of the nation through applied science and technology.” In the following section, details to internal and external activities in climate change adaptation are presented.

Developing Resilience to Climate Change Adaptation for the LLNL Site

There are numerous ways that climate change could impact the LLNL site, directly and indirectly. These include:

- Heat waves
- Wildfires
- Sea level change
- Changes in precipitation

The degree to which these impacts affect the lab varies. The table below summarizes how these impacts trigger site-relevant events, the relative degree of those events, and ongoing actions for adapting to those impacts. It should be noted that LLNL climate scientists have reported that forecasts at the local scale can be highly uncertain. In particular, multiple climate and weather forecasts for the San Francisco Bay Area have shown divergent trends in temperature and precipitation forecasts. While the LLNL site may see no change to average local temperature or precipitation, LLNL is prepared for a multitude of climate change impacts in the following ways:

Climate Impact	Regional Impact	Site-relevant events	Degree of importance of those events	LLNL adaptation to those events
Heat Waves	Increased local temperature	Greater cooling needs in buildings; increased costs and GHGs expended in cooling buildings	Medium	LLNL is working to make its building more responsive to temperature changes, and building more efficient buildings that will use less energy in the future.
Heat waves	California-wide strains on the electrical system	Black-outs, or brown-outs of local electrical grid	High	LLNL has sufficient electrical backup for the site as part of its electric plan.

Climate Impact	Regional Impact	Site-relevant events	Degree of importance of those events	LLNL adaptation to those events
Wildfires	Increased risk to Site 300	Reduction of activities at Site 300	Low	Site 300 constantly manages its open space through controlled burns and other approaches.
Sea Level Change	Increase sea level of San Francisco Bay	Transportation challenges to staff, suppliers, and stakeholders	Low	LLNL works with local transportation organizations to provide alerts and planning assistance to its employees.
Changes in Precipitation	Drought	Reduced water availability for cooling water	Medium	LLNL is able to access two separate and different water sources, one from the Sierra Nevada, one a local source. It is unlikely that both sources will be impacted. In addition, the site is exploring non-water based cooling techniques for future facility electrical cooling needs.
Changes in Precipitation	Drought	Reduced water availability for vegetation	Low	LLNL is progressing towards drought-resistant landscaping, and captures rainwater through the Water Conservation Test Bed Project.
Changes in Precipitation	Flood	Site flooding and impacts to local transportation	Medium	LLNL is in constant communication with local and regional planning departments, including water runoff, and long-term planning as a part of that discussion.

External Stakeholder Assistance to Climate Change Adaptation

As part of its mission to assist the nation and its partners in Energy and Environmental security, LLNL seeks to “advance science to better understand climate change and its impacts and develop technologies supportive of a carbon-free energy future.” LLNL contributes to efforts in climate change adaptation in two ways, in advancing climate science, and in delivering expert opinion and advice on the impacts of climate change to its different stakeholders.

Advancing Climate Science

LLNL’s PCMDI is the cornerstone of the scientific community’s climate change research. Since 1989, PCMDI has been leading efforts to develop improved methods and tools for the diagnosis and intercomparison of general circulation models that simulate the global climate. These models of climate change, from collaborators worldwide, are used to determine the potential impacts of climate change on the civilization, and used to assess the potential impacts of that change. PCMDI enables a non-biased comparison of techniques and model results, resulting in a level of rigor in climate modeling that is unsurpassed. As a result of PCMDI’s contributions, the Intergovernmental Panel on Climate Change (IPCC), who reports on scientific conclusions from climate change modeling, was awarded the Nobel Prize in 2007.

Stakeholder Guidance on Climate Change Adaptation

LLNL scientists have long been working with stakeholders on efforts to quantify the impacts and risks of climate change to the human and natural environment, as well as on the economy, and international and domestic security. In addition to working with its federal partners (e.g. the Departments of Defense, Agriculture, Homeland Security, Intelligence Agencies), LLNL scientists have contributed to climate change adaptation planning efforts by the Department of Energy’s Sustainability Performance Office, the City of Livermore, and the San Francisco Bay Area.



- 1.1 CEDR Content
- 1.2 Performance Summary
- 2.1 Energy Management Data Report - Energy Efficiency Improvements and Funding
- 3.1 Facilities Utility/Fuel Consumption and Cost
 - 3.2a List of Operating On-Site Renewable Energy Systems
 - 3.2b List of Purchased Renewable Energy
- 3.3 Conservation and Renewable Energy Measures List
- 3.4 Building Inventory Changes, HPSB Compliance and Projected Utilities Consumption
- 4.1 Source Energy Savings Credit
- 5.1 Data Centers
- 6.1 Fugitive Emissions: Refrigerants and Fluorinated Gases, Mixed Refrigerants
- 6.2 Fugitive Emissions: Fugitive Fluorinated Gases and Other Fugitive Emissions
- 6.3 Industrial Process Emissions by Process
 - 7.1a Fugitive Emissions: On-Site Wastewater Treatment
 - 7.1b Contracted Wastewater Treatment
- 8.1 Business Air Travel
- 8.2 Business Ground Travel
- 8.3 Employee Commuting
- 9.1a Fugitive Emissions: On-Site Landfills and Municipal Solid Waste Facilities
- 9.1b Fugitive Emissions: Contracted/Off-Site Landfills and Municipal Solid Waste Facilities
- 10 Fleet Fuel
- 11 EISA Section 432 - Compliance Path

CEDR Content

The Consolidated Energy Data Report (CEDR) consists of 23 worksheets that should be completed by each site, as applicable, and included as part each site's SSP in a MS Excel electronic format. The CEDR is due to the SPO no later than December 7th.

Worksheet	Overview	Action
1.1 Content	Stand-alone overview of the CEDR tabs.	None.
1.2 Performance Summary	Summary table of goals performance.	None.
1.3 Factors and Drop-down Keys	Reference tab containing all factors and drop-down menus information for all tabs.	None.
2.1 Funds, Meters, Training	Collects information on energy and water spending, and metering status.	If applicable, complete cells with blue text.
3.1 Energy & Water	Collects quarterly consumption and associated cost information for facilities, non-fleet vehicles and equipment, and fully serviced leases (new, voluntary in FY 2012) for each fiscal year since FY 2003. Do not report on-site generated and purchased renewable energy or on-site generated non-renewable energy in this tab.	Enter FY 2012 consumption and cost data and review historical information for accuracy.
3.2a Operating On-Site Renewables	Houses the list of active renewable energy systems at DOE sites to track progress towards renewable energy requirements in EPAct2005 and DOE O 436.1. Also used towards developing the site's GHG inventory.	Review pre-populated data and update as necessary.
3.2b Purchased Renewables	Collects renewable energy purchases to track progress towards renewable energy requirements in EPAct 2005 and DOE O 436.1. Also used towards developing the site's GHG inventory.	Review pre-populated data and update with FY 2012 purchased data.
3.3 Conservation & RE Measures	Tracks planned energy and water conservation measures, in addition to future renewable energy systems. Also used to project future energy/water consumption along with performance towards goals.	Review pre-populated data and update as necessary.
3.4 Bldg Inventory Changes	Tracks demolition and new construction projects along with construction requirements for meeting HPSB, EPAct 2005 30 percent better than ASHRAE, and stormwater design. Also used to project future energy/water consumption.	Review pre-populated data and update as necessary.
4.1 Source Energy Savings Credit	Part of the Annual Energy Report to adjust site energy use accounting from projects — especially combined heat and power — that would change the accounting of site vs. source energy.	Complete worksheet, if applicable.
5.1 Data Centers	Inventory of DOE data centers along with basic energy management metrics.	Complete worksheet, if not using DOEGRIT.
6.1 Mixed Refrigerants	Collects and calculates fugitive emission data for refrigerants and fluorinated gases.	Review pre-populated data and update with FY 2012 emissions.
6.2 Fugitive F-gases	Collects and calculates fugitive emission data for fluorinated gases and other fugitive emissions.	Review pre-populated data and update with FY 2012 emissions.
6.3 Industrial Process	Collects and calculates GHG emission data for industrial process by process.	Review pre-populated data and update with FY 2012 emissions.
7.1a On-Site Wastewater	Collects and calculates fugitive emissions data for on-site wastewater treatment.	Review pre-populated data and update with FY 2012 emissions.
7.1b Contr. Wastewater	Collects and calculates GHG emissions resulting from contracted off-site wastewater treatment, excluding electricity.	Review pre-populated data and update with FY 2012 emissions.
8.1 Air Bus Travel	Collects and calculates emissions for prime contractor employee business air travel.	Review pre-populated data and update with FY 2012 emissions.
8.2 Ground Bus Travel	Collects and calculates emissions for prime contractor employee business ground travel.	Review pre-populated data and update with FY 2012 emissions.
8.3 Commuter Travel	Collects and calculates emissions for prime contractor employee commuting.	Review pre-populated data and update with FY 2012 emissions.
9.1a On-Site Landfill (Optional)	Calculates emissions for on-site landfill; data should be consistent with PPTRS entry.	Optional – Based on PPTRS data entry.
9.1b Off-Site MSW (Optional)	Calculates emissions for contracted/off-site municipal solid waste disposal; data should be consistent with PPTRS entry.	Optional – Based on PPTRS data entry.
10 Fleet Fuel (Optional)	Calculates emissions for fleet fuel consumption based on FAST data.	Optional - Download and paste FAST data.
11 Covered Facilities	List of covered facilities with anticipated evaluation dates and type/level.	Select covered facilities and complete associated data columns.

Performance Summary

The table below summarized performance for several sustainability goals based on information reported in this workbook. Please note, Scope 1 & 2 GHG emissions do not include emissions from on-site and contracted landfill as these are to be reported in PPTRS.

SSPP Goal #	DOE Goal	Baseline	Current FY	Performance Status
1.1	28% Scope 1 & 2 GHG reduction by FY 2020 from a FY 2008 baseline	193,046.4	148,714	-23.0%
1.2	13% Scope 3 GHG reduction by FY 2020 from a FY 2008 baseline	43,216.8	35,542	-17.8%
2.1	30% energy intensity reduction by FY 2015 from a FY 2003 baseline (Note: Estimates without REC credit)	234,800	201,606	-14.14%
	Goal Energy (10 ⁶ Btu)	1,467,727	1,235,645	
	Goal Square Footage (x1,000)	6,251	6,129	
2.3a	Individual buildings or processes metering for 90% of electricity (by October 1, 2012)		90%	90%
2.3b	Individual buildings or processes metering for 90% of natural gas (by October 1, 2015)		52.0%	52.0%
2.3c	Individual buildings or processes metering for 90% of steam (by October 1, 2015)		0.0%	0.0%
2.3d	Individual buildings or processes metering for 90% of chilled water (by October 1, 2015)		0.0%	0.0%
2.7	7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter (5% FY 2010 – 2012)	408,051	33,820	8.3%
3.2	2% annual reduction in fleet petroleum consumption by FY 2020 relative to a FY 2005 baseline (Note: Estimates without biodiesel credit)	355,266	131,134	-63.1%
3.1	10% annual increase in fleet alternative fuel consumption by FY 2015 relative to a FY 2005 baseline	3,160	81,042	2464.6%
4.1	26% water intensity reduction by FY 2020 from a FY 2007 baseline	35.8	34.6	-3.30%
	Potable Water Consumption (10 ⁶ Gal)	255	241	
	Total Gross Square Footage (x1,000)	7,104	6,950	
4.2	20% water consumption reduction of industrial, landscaping, and agricultural (ILA) water by FY 2020 from a FY 2010 baseline	0	0	#DIV/0!

Energy Management Data Report

Requirement(s): See tables

Instructions: If applicable, complete cells with blue text and highlight the cell. The information requested is for completing DOE's Annual Energy Report.

Source: Site/Lab

ENERGY EFFICIENCY IMPROVEMENTS AND FUNDING

1-1. E.O. 13514/OMB Circular A-11 Direct Agency Obligations

	FY 2012		Projected FY 2013		Projected FY 2014	
		(Thou. \$)		(Thou. \$)		(Thou. \$)
Direct obligations for facility energy efficiency improvements, including facility surveys/audits		\$639.9		\$150.0		\$150.0
Estimated annual energy savings anticipated from obligations (Million BTU)	2,154.6	\$429.9	0.0	\$0.0	0.0	\$0.0
Estimated annual water savings anticipated from obligations (Thousands Gal)	1,252.0	\$85.0	0.0	\$0.0	0.0	\$0.0

1-2. E.O. 13514/OMB Circular A-11 Awarded Energy Savings Performance Contracts (ESPCs)

	Annual savings (10^6 BTU)	(Number/Thou. \$)
Number of ESPC Task/Delivery Orders awarded in fiscal year & annual energy (Million BTU) savings	0.0	0.0
Investment value of ESPC Task/Delivery Orders awarded in fiscal year		\$0.0
Amount privately financed under ESPC Task/Delivery Orders awarded in fiscal year		\$0.0
Cumulative guaranteed cost savings of ESPCs awarded in fiscal year relative to the baseline spending		\$0.0
Total contract award value of ESPCs awarded in fiscal year (sum of contractor payments for debt repayment, M&V, and other negotiated performance period services)		\$0.0
Total payments made to all ESPC contractors in fiscal year		\$0.0

1-3. E.O. 13514/OMB Circular A-11 Awarded Utility Energy Services Contracts (UESCs)

	Annual savings (10^6 BTU)	(Number/Thou. \$)
Number of UESC Task/Delivery Orders awarded in fiscal year & annual energy (Million BTU) savings	0.0	0.0
Investment value of UESC Task/Delivery Orders awarded in fiscal year		\$0.0
Amount privately financed under UESC Task/Delivery Orders awarded in fiscal year		\$0.0
Cumulative cost savings of UESCs awarded in fiscal year relative to the baseline spending		\$0.0
Total contract award value of UESCs awarded in fiscal year (sum of payments for debt repayment and other negotiated performance period services)		\$0.0
Total payments made to all UESC contractors in fiscal year		\$0.0

1-4. EPart 1992 Training

	(Number)	(Thou. \$)
Number of personnel trained in FY 2012/Expenditure	0	\$0.0

Energy Management Data Report

Requirement(s): See tables

Instructions: If applicable, complete cells with blue text and highlight the cell. The information requested is for completing DOE's Annual Energy Report.

Source: Site/Lab

1-5a. EPAct 2005 Metering Of Electricity Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		
		# of Buildings with Standard Meters	Estimated Amount of Purchased Electricity Metered (kWh/Yr)	Estimated Amount of On-Site Generate Electricity Metered (kWh/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Electricity Metered (kWh/Yr)	Estimated Amount of On-Site Generate Electricity Metered (kWh/Yr)	# of Appropriate Buildings with Dedicated	Cumulative % of "Appropriate" Buildings Metered	Total % of Electricity Metered
2012 Report	116	7	2,146,474	0	109	363,525,852	0	116.0	100.0%	90%
2013 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2014 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2015 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%

1-5b. EISA 2007 Metering Of Natural Gas Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		
		# of Buildings with Standard Meters	Estimated Amount of Purchased Natural Gas Metered (CF/Yr)	Estimated Amount of On-Site Generate Natural Gas Metered (CF/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Natural Gas Metered (CF/Yr)	Estimated Amount of On-Site Generate Natural Gas Metered (CF/Yr)	# of Appropriate Buildings with Dedicated	Cumulative % of "Appropriate" Buildings Metered	Total % of Natural Gas Metered
2012 Report	32	22	69,248	0	10	144,805	0	32.0	100.0%	52%
2013 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2014 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2015 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%

1-5c. EISA 2007 Metering Of Steam Use - N/A

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPAct 2005	Standard Meters			Advanced Meters			Total		
		# of Buildings with Standard Meters	Estimated Amount of Purchased Steam Metered (Btu/Yr)	Estimated Amount of On-Site Generate Steam Metered (Btu/Yr)	# of Buildings with Advanced Meters	Estimated Amount of Purchased Steam Metered (Btu/Yr)	Estimated Amount of On-Site Generate Steam Metered (Btu/Yr)	# of Appropriate Buildings with Dedicated	Cumulative % of "Appropriate" Buildings Metered	Total % of Steam Metered
2012 Report	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2013 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2014 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2015 Planned	0	0	0	0	0	0	0	0.0	#DIV/0!	0.0%

Energy Management Data Report

Requirement(s): See tables

Instructions: If applicable, complete cells with blue text and highlight the cell. The information requested is for completing DOE's Annual Energy Report.

Source: Site/Lab

1-5d. DOE O 436.1 & SSPP Metering Of Chilled Water Use - N/A

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPA Act 2005	Standard Meters		# of Buildings with Advanced Meters	Advanced Meters		Total		Total % of Chilled Water Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Chilled Water Metered (Btu/Yr)	Estimated Amount of On-Site Generate Chilled Water Metered (Btu/Yr)	Estimated Amount of Purchased Chilled Water Metered (Btu/Yr)	Estimated Amount of On-Site Generate Chilled Water Metered (Btu/Yr)	# of Appropriate Buildings with Dedicated	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2013 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2014 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2015 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%

1-5e. Water Management Best Practice Metering Of Water Use

(Note: If a building has an advanced and a standard meter, only account for the advanced meter. If a building has multiple meters, ensure the utility metered is accounted/reported only once)

Fiscal Year	# of "Appropriate" Buildings Per EPA Act 2005	Standard Meters		# of Buildings with Advanced Meters	Advanced Meters		Total		Total % of Water Metered
		# of Buildings with Standard Meters	Estimated Amount of Purchased Water Metered (Gal/Yr)	Estimated Amount of On-Site Captured Water Metered (Gal/Yr)	Estimated Amount of Purchased Water Metered (Gal/Yr)	Estimated Amount of On-Site Captured Water Metered (Gal/Yr)	# of Appropriate Buildings with Dedicated	Cumulative % of "Appropriate" Buildings Metered	
2012 Report	1	1	98,367,000	0	13,978,000	0	1.0	100.0%	47%
2013 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2014 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%
2015 Planned	0	0	0	0	0	0	0.0	#DIV/0!	0.0%

Facilities Utility/Fuel Consumption and Cost

Requirement(s): NECPA, EPAAct 2005, EISA 2007, DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 quarterly consumption and associated cost information for facilities, non-fleet vehicles and equipment, and fully serviced leases (new, voluntary in FY 2012) by utility/fuel type and address SPO requests. On-site non-renewable energy should not be reported in this tab. To receive appropriate credit for metering of on-site generated non-renewable energy complete the “Total % of [utility] Metered” column in tab 2.1. On-site generated and purchased renewable energy should be reported in tabs 3.2a and 3.2b, respectively. FY 2012 square footage should be estimated based on FIMS reports 008, 047, and 063. The SPO will update estimated square footage, if need be, based on the FIMS snapshot in mid-November. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the “Additional Information” column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Utility/Fuel Consumption and Cost												Notes			Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 \$)	\$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic MtCO ₂ e	Biogenic MtCO ₂ e	Scope 3 - T&D Loss, MtCO ₂ e
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2003	1	70,057.000	239,034.484	\$2,523.420	\$ 0.04	94550			2	23,110.331	0.000	1,522.301
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2003	1	4.430	611.340	\$3.721	\$ 0.84	94550			1	45.367	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2003	1	120,043.403	123,404.618	\$565.652	\$ 0.00	94550			1	6,549.330	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2003	1	7,398.390	25,243.307	\$266.486	\$ 0.04	94550			2	2,440.573	0.000	160.763
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2003	1	386.086	396.896	\$1.819	\$ 0.00	94550			1	21.064	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2003	2	70,200.000	239,522.400	\$2,218.059	\$ 0.03	94550			2	23,157.504	0.000	1,525.408
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2003	2	6.019	830.622	\$7.361	\$ 1.22	94550			1	61.640	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2003	2	136,098.000	139,908.744	\$882.715	\$ 0.01	94550			1	7,425.237	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2003	2	6,563.918	22,396.088	\$207.395	\$ 0.03	94550			2	2,165.299	0.000	142.630
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2003	2	435.236	447.423	\$2.823	\$ 0.01	94550			1	23.746	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2003	3	74,884.000	255,504.208	\$2,879.837	\$ 0.04	94550			2	24,702.657	0.000	1,627.189
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2003	3	1.958	270.204	\$1.851	\$ 0.95	94550			1	20.052	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2003	3	110,309.000	113,397.652	\$646.862	\$ 0.01	94550			1	6,018.240	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2003	3	5,576.671	19,027.601	\$214.464	\$ 0.04	94550			2	1,839.626	0.000	121.178
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2003	3	377.889	388.470	\$2.216	\$ 0.01	94550			1	20.617	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2003	4	80,391.000	274,294.092	\$3,293.201	\$ 0.04	94550			2	26,519.300	0.000	1,746.853
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2003	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2003	4	78,744.000	80,948.832	\$449.200	\$ 0.01	94550			1	4,296.116	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2003	4	6,250.969			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2003	4	6,851.293	23,376.612	\$280.662	\$ 0.04	94550			2	2,260.097	0.000	148.875
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2003	4	240.343	247.073	\$1.371	\$ 0.01	94550			1	13.113	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2003	4	772.946			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2004	1	80,172.000	273,546.864	\$3,026.057	\$ 0.04	94550			2	26,447.057	0.000	1,742.094
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2004	1	2.424	334.512	\$3.030	\$ 1.25	94550			1	24.824	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2004	1	1.340	123.280	\$1.901	\$ 1.42	94550			1	7.795	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2004	1	127,970.000	131,553.160	\$676.321	\$ 0.01	94550			1	6,981.789	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2004	1	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2004	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2004	2	80,956.000	276,221.872	\$2,947.645	\$ 0.04	94550			2	26,705.682	0.000	1,759.130
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2004	2	3.594	495.972	\$4.258	\$ 1.18	94550			1	36.806	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2004	2	2.070	190.440	\$3.121	\$ 1.51	94550			1	12.041	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2004	2	145,995.000	150,082.860	\$892.188	\$ 0.01	94550			1	7,965.198	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2004	2	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2004	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2004	3	86,284.000	294,401.008	\$3,031.647	\$ 0.04	94550			2	28,463.277	0.000	1,874.905
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2004	3	1.495	206.310	\$2.262	\$ 1.51	94550			1	15.310	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2004	3	1.490	137.080	\$1.916	\$ 1.29	94550			1	8.667	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2004	3	106,817.000	109,807.876	\$635.695	\$ 0.01	94550			1	5,827.724	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2004	3	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2004	3	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2004	4	92,078.000	314,170.136	\$3,491.934	\$ 0.04	94550			2	30,374.596	0.000	2,000.805
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2004	4	0.142	19.596	\$0.220	\$ 1.55	94550			1	1.454	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2004	4	0.180	16.560	\$0.270	\$ 1.50	94550			1	1.047	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2004	4	85,274.000	87,661.672	\$552.533	\$ 0.01	94550			1	4,652.380	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2004	4	7,235.023			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2004	4	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2004	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2004	4	0.000			NA	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2005	1	84,641.000	288,795.092	\$3,143.510	\$ 0.04	94550			2	27,921.286	0.000	1,839.203
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2005	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2005	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2005	1	140,865.000	144,809.220	\$1,035.218	\$ 0.01	94550			1	7,685.315	0.000	0.000

Utility/Fuel Consumption and Cost												Notes			Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 \$)	\$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic MtCO ₂ e	Biogenic MtCO ₂ e	Scope 3 - T&D Loss, MtCO ₂ e
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2005	1	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2005	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2005	2	83,237.000	284,004.644	\$3,564.238	\$ 0.04	94550			2	27,458.136	0.000	1,808.695
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2005	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2005	2	2.260	207.920	\$3.865	\$ 1.71	94550			1	13.147	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2005	2	143,486.000	147,503.608	\$971.960	\$ 0.01	94550			1	7,828.311	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2005	2	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2005	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2005	3	88,286.000	301,231.832	\$4,869.963	\$ 0.06	94550			2	29,123.695	0.000	1,918.407
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2005	3	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2005	3	1.610	148.120	\$2.661	\$ 1.65	94550			1	9.365	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2005	3	111,807.000	114,937.596	\$789.697	\$ 0.01	94550			1	6,099.968	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2005	3	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2005	3	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2005	4	99,968.000	341,090.816	\$5,641.050	\$ 0.06	94550			2	32,977.341	0.000	2,172.250
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2005	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2005	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2005	4	83,156.000	85,484.368	\$665.950	\$ 0.01	94550			1	4,536.826	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2005	4	7,266.700			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2005	4	0.000	0.000	\$0.000	NA	94550			2	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2005	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2005	4	0.000			NA	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2006	1	81,580.380	278,352.257	\$4,553.038	\$ 0.06	94550			2	26,911.652	0.000	1,772.697
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2006	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2006	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2006	1	120,273.700	123,641.364	\$1,337.570	\$ 0.01	94550			1	6,561.894	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2006	1	16,572.390	56,544.995	\$922.088	\$ 0.06	94550			2	5,466.883	0.000	360.109
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2006	1	1,740.277	1,789.005	\$19.354	\$ 0.01	94550			1	94.946	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2006	2	76,163.030	259,868.258	\$4,250.560	\$ 0.06	94550			2	25,124.582	0.000	1,654.981
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2006	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2006	2	3.290	302.680	\$5.513	\$ 1.68	94550			1	19.138	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2006	2	144,022.100	148,054.719	\$1,247.555	\$ 0.01	94550			1	7,857.560	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2006	2	19,348.030	66,015.478	\$1,076.524	\$ 0.06	94550			2	6,382.508	0.000	420.422
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2006	2	2,083.898	2,142.247	\$18.051	\$ 0.01	94550			1	113.693	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2006	3	80,130.410	273,404.959	\$2,279.348	\$ 0.03	94550			2	26,433.337	0.000	1,741.190
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2006	3	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2006	3	1.420	130.640	\$2.175	\$ 1.53	94550			1	8.260	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2006	3	101,908.500	104,761.938	\$677.902	\$ 0.01	94550			1	5,559.926	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2006	3	19,530.130	66,636.804	\$553.820	\$ 0.03	94550			2	6,442.579	0.000	424.379
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2006	3	1,474.535	1,515.822	\$9.808	\$ 0.01	94550			1	80.448	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2006	4	83,118.300	283,599.640	\$4,631.270	\$ 0.06	94550			2	27,418.979	0.000	1,806.116
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2006	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2006	4	0.400	36.800	\$0.627	\$ 1.57	94550			1	2.327	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2006	4	87,861.380	90,321.499	\$599.458	\$ 0.01	94550			1	4,793.543	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2006	4	6,994.439			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2006	4	20,317.300	69,322.628	\$1,046.544	\$ 0.05	94550			2	6,702.250	0.000	441.484
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2006	4	1,271.000	1,306.588	\$8.630	\$ 0.01	94550			1	69.343	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2006	4	241.197			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2007	1	69,315.250	236,503.633	\$3,592.310	\$ 0.05	94550			2	22,865.643	0.000	1,506.183
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2007	1	1.411	129.812	\$2.288	\$ 1.62	94550			1	8.208	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2007	1	133,086.500	136,812.922	\$947.870	\$ 0.01	94550			1	7,260.935	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2007	1	27,825.350	94,940.094	\$1,465.277	\$ 0.05	94550			2	9,178.998	0.000	604.630
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2007	1	3,964.107	4,075.102	\$28.233	\$ 0.01	94550			1	216.274	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2007	1	51.280		\$167.746	\$ 3.27	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2007	2	70,677.450	241,151.459	\$4,835.460	\$ 0.07	94550			2	23,315.005	0.000	1,535.783
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2007	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2007	2	145,213.200	149,279.170	\$1,100.130	\$ 0.01	94550			1	7,922.544	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2007	2	25,890.950	88,339.921	\$1,363.411	\$ 0.05	94550			2	8,540.880	0.000	562.596
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2007	2	2,627.492	2,701.062	\$19.906	\$ 0.01	94550			1	143.351	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2007	2	22.939		\$130.299	\$ 5.68	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2007	3	71,115.480	242,646.018	\$4,798.430	\$ 0.07	94550			2	23,459.501	0.000	1,545.301

Utility/Fuel Consumption and Cost												Notes			Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 \$)	\$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic MtCO ₂ e	Biogenic MtCO ₂ e	Scope 3 - T&D Loss, MtCO ₂ e
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2007	3	3.366	309.672	\$4.987	\$ 1.48	94550			1	19,580	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2007	3	106,221.600	109,195.805	\$832.740	\$ 0.01	94550			1	5,795.240	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2007	3	28,423.280	96,980.231	\$1,496.763	\$ 0.05	94550			2	9,376.242	0.000	617.622
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2007	3	2,633.252	2,706.983	\$20.644	\$ 0.01	94550			1	143.665	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2007	3	78.904		\$216.680	\$ 2.75	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2007	4	76,978.930	262,652.109	\$6,061.950	\$ 0.08	94550			2	25,393.730	0.000	1,672.710
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2007	4	0.514	47.288	\$0.822	\$ 1.60	94550			1	2.990	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2007	4	83,016.800	85,341.270	\$546.430	\$ 0.01	94550			1	4,529.232	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2007	4	6,060.980			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2007	4	30,232.300	103,152.608	\$1,592.026	\$ 0.05	94550			2	9,973.000	0.000	656.931
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2007	4	2,718.885	2,795.014	\$17.896	\$ 0.01	94550			1	148.337	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2007	4	1,043.234			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2007	4	101.385		\$350.188	\$ 3.45	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2008	1	66,285.000	226,164.420	\$3,868.000	\$ 0.06	94550			2	21,866.028	0.000	1,440.337
NNSA	112	LLNL	Buildings	Fuel Oil	1,000 Gallons	2008	1	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2008	1	0.588	54.096	\$0.764	\$ 1.30	94550			1	3.420	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2008	1	131,909.000	135,602.452	\$1,010.000	\$ 0.01	94550			1	7,196.693	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2008	1	33,783.000	115,267.596	\$1,944.000	\$ 0.06	94550			2	11,144.301	0.000	734.086
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2008	1	2,719.000	2,795.132	\$21.000	\$ 0.01	94550			1	148.343	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2008	1	45.248		\$191.346	\$ 4.23	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2008	2	65,442.000	223,288.104	\$3,800.000	\$ 0.06	94550			2	21,587.940	0.000	1,422.019
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2008	2	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2008	2	147,338.000	151,463.464	\$1,254.000	\$ 0.01	94550			1	8,038.469	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2008	2	32,405.000	110,565.860	\$1,864.000	\$ 0.06	94550			2	10,689.728	0.000	704.143
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2008	2	3,342.000	3,435.576	\$28.000	\$ 0.01	94550			1	182.333	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2008	2	37.169		\$154.323	\$ 4.15	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2008	3	64,048.000	218,531.776	\$3,742.000	\$ 0.06	94550			2	21,128.088	0.000	1,391.728
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2008	3	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2008	3	103,633.000	106,534.724	\$1,134.000	\$ 0.01	94550			1	5,654.011	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2008	3	33,882.000	115,605.384	\$1,949.000	\$ 0.06	94550			2	11,176.959	0.000	736.237
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2008	3	3,530.000	3,628.840	\$39.000	\$ 0.01	94550			1	192.590	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2008	3	75.128		\$317.187	\$ 4.22	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2008	4	66,056.000	225,383.072	\$3,877.000	\$ 0.06	94550			2	21,790.485	0.000	1,435.361
NNSA	112	LLNL	Buildings	LPG	1,000 Gallons	2008	4	0.000	0.000	\$0.000	NA	94550			1	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2008	4	76,438.000	78,578.264	\$745.000	\$ 0.01	94550			1	4,170.306	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2008	4	6,288.900			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2008	4	34,984.000	119,365.408	\$2,013.000	\$ 0.06	94550			2	11,540.486	0.000	760.183
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2008	4	3,253.000	3,344.084	\$32.000	\$ 0.01	94550			1	177.477	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2008	4	821.026			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2008	4	88.310		\$431.846	\$ 4.89	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2009	1	63,326.000	216,068.312	\$4,057.000	\$ 0.06	94550			2	20,889.916	0.000	1,376.040
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2009	1	118,011.000	121,315.308	\$819.000	\$ 0.01	94550			1	6,438.446	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2009	1	36,477.000	124,459.524	\$2,337.000	\$ 0.06	94550			2	12,032.995	0.000	792.625
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2009	1	3,701.000	3,804.628	\$26.000	\$ 0.01	94550			1	201.919	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2009	1	43.557		\$213.423	\$ 4.90	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2009	2	62,318.000	212,629.016	\$3,994.000	\$ 0.06	94550			2	20,557.398	0.000	1,354.136
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2009	2	132,495.000	136,204.860	\$728.000	\$ 0.01	94550			1	7,228.664	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2009	2	33,591.000	114,612.492	\$2,153.000	\$ 0.06	94550			2	11,080.965	0.000	729.914
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2009	2	2,995.000	3,078.860	\$16.000	\$ 0.01	94550			1	163.401	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2009	2	32.253		\$152.723	\$ 4.74	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2009	3	64,060.000	218,572.720	\$3,354.000	\$ 0.05	94550			2	21,132.047	0.000	1,391.989
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2009	3	93,866.000	96,494.248	\$371.000	\$ 0.00	94550			1	5,121.143	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2009	3	34,924.000	119,160.688	\$1,828.000	\$ 0.05	94550			2	11,520.693	0.000	758.880
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2009	3	2,777.000	2,854.756	\$11.000	\$ 0.00	94550			1	151.508	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2009	3	62.500		\$305.859	\$ 4.89	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2009	4	70,332.000	239,972.784	\$4,659.000	\$ 0.07	94550			2	23,201.048	0.000	1,528.276
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2009	4	71,166.000	73,158.648	\$264.000	\$ 0.00	94550			1	3,882.676	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2009	4	6,230.158			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2009	4	34,732.000	118,505.584	\$2,301.000	\$ 0.07	94550			2	11,457.356	0.000	754.708
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2009	4	2,185.000	2,246.180	\$8.000	\$ 0.00	94550			1	119.209	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2009	4	826.708			\$ -	94550			NA	0.000	0.000	0.000

Utility/Fuel Consumption and Cost												Notes			Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 \$)	\$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic MtCO ₂ e	Biogenic MtCO ₂ e	Scope 3 - T&D Loss, MtCO ₂ e
NNSA	112	LLNL	Water	Potable	Million Gallons	2009	4	101.138		\$459.445	\$ 4.54	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2010	1	65,703.000	224,178.636	\$4,449.000	\$ 0.07	94550			2	21,674.038	0.000	1,427.691
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2010	1	124,649.000	128,139.172	\$667.000	\$ 0.01	94550			1	6,800.602	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2010	1	34,741.000	118,536.292	\$2,353.000	\$ 0.07	94550			2	11,460.325	0.000	754.903
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2010	1	3,531.000	3,629.868	\$19.000	\$ 0.01	94550			1	192.644	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2010	1	44.854		\$201.551	\$ 4.49	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2010	2	62,843.000	214,420.316	\$4,344.000	\$ 0.07	94550			2	20,730.584	0.000	1,365.544
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2010	2	125,803.000	129,325.484	\$797.000	\$ 0.01	94550			1	6,863.562	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2010	2	33,688.000	114,943.456	\$2,329.000	\$ 0.07	94550			2	11,112.963	0.000	732.022
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2010	2	3,198.000	3,287.544	\$20.000	\$ 0.01	94550			1	174.477	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2010	2	34.750		\$162.362	\$ 4.67	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2010	3	63,861.000	217,893.732	\$4,700.000	\$ 0.07	94550			2	21,066.401	0.000	1,387.665
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2010	3	97,065.000	99,782.820	\$475.000	\$ 0.00	94550			1	5,295.674	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2010	3	35,051.000	119,594.012	\$2,580.000	\$ 0.07	94550			2	11,562.588	0.000	761.639
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2010	3	2,716.000	2,792.048	\$13.000	\$ 0.00	94550			1	148.180	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2010	3	59.302		\$265.918	\$ 4.48	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2010	4	67,875.000	231,589.500	\$5,326.000	\$ 0.08	94550			2	22,390.535	0.000	1,474.887
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2010	4	79,626.000	81,855.528	\$279.000	\$ 0.00	94550			1	4,344.237	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2010	4	6,265.845			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2010	4	37,060.000	126,448.720	\$2,908.000	\$ 0.08	94550			2	12,225.315	0.000	805.294
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2010	4	2,317.000	2,381.876	\$8.000	\$ 0.00	94550			1	126.411	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2010	4	826.798			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2010	4	93.953		\$275.898	\$ 2.94	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2011	1	63,461.000	216,528.932	\$4,439.000	\$ 0.07	94550			2	19,033.029	0.000	1,253.725
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2011	1	114,907.000	118,124.396	\$544.000	\$ 0.00	94550			1	6,269.098	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2011	1	34,771.748	118,641.204	\$2,432.000	\$ 0.07	94550			2	10,428.637	0.000	686.945
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2011	1	3,074.000	3,160.072	\$15.000	\$ 0.00	94550			1	167.711	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2011	1	44.157		\$297.879	\$ 6.75	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2011	2	59,710.000	203,730.520	\$4,322.000	\$ 0.07	94550			2	17,908.041	0.000	1,179.621
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2011	2	132,246.000	135,948.888	\$625.000	\$ 0.00	94550			1	7,215.079	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2011	2	30,907.000	105,454.684	\$2,237.000	\$ 0.07	94550			2	9,269.533	0.000	610.593
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2011	2	3,583.000	3,683.324	\$17.000	\$ 0.00	94550			1	195.481	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2011	2	24.125		\$126.401	\$ 5.24	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2011	3	61,232.000	208,923.584	\$2,814.000	\$ 0.05	94550			2	18,364.515	0.000	1,209.689
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2011	3	100,003.000	102,803.084	\$505.000	\$ 0.01	94550			1	5,455.965	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2011	3	31,266.000	106,679.592	\$2,098.000	\$ 0.07	94550			2	9,377.203	0.000	617.686
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2011	3	3,016.000	3,100.448	\$15.000	\$ 0.00	94550			1	164.547	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2011	3	58.563		\$305.497	\$ 5.22	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2011	4	65,814.000	224,557.368	\$2,814.000	\$ 0.04	94550			2	19,738.734	0.000	1,300.210
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2011	4	72,335.000	74,360.380	\$362.000	\$ 0.01	94550			1	3,946.454	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2011	4	6,214.581			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2011	4	31,817.000	108,559.604	\$1,361.000	\$ 0.04	94550			2	9,542.458	0.000	628.571
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2011	4	2,823.000	2,902.044	\$14.000	\$ 0.00	94550			1	154.017	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2011	4	821.196			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2011	4			\$508.326	#VALUE!	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2012	1	60,679.000	207,036.748	\$3,835.000	\$ 0.06	94550			2	18,198.660	0.000	1,198.764
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2012	1	106,233.000	109,207.524	\$405.000	\$ 0.00	94550			1	5,795.862	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2012	1	30,213.000	103,086.756	\$1,910.000	\$ 0.06	94550			2	9,061.391	0.000	596.883
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2012	1	10,004.000	10,284.112	\$38.000	\$ 0.00	94550			1	545.798	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2012	1	46.052		\$265.044	\$ 5.76	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2012	2	57,974.000	197,807.288	\$3,258.000	\$ 0.06	94550			2	17,387.385	0.000	1,145.324
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2012	2	113,578.000	116,758.184	\$353.000	\$ 0.00	94550			1	6,196.590	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2012	2	36,016.000	122,886.592	\$2,024.000	\$ 0.06	94550			2	10,801.809	0.000	711.526
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2012	2	11,027.000	11,335.756	\$34.000	\$ 0.00	94550			1	601.611	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2012	2	39.838		\$233.949	\$ 5.87	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2012	3	62,781.000	214,208.772	\$3,045.000	\$ 0.05	94550			2	18,829.086	0.000	1,240.291
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2012	3	82,554.000	84,865.512	\$218.000	\$ 0.00	94550			1	4,503.982	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2012	3	47,852.000	163,271.024	\$2,321.000	\$ 0.05	94550			2	14,351.626	0.000	945.356
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2012	3	10,106.000	10,388.968	\$27.000	\$ 0.00	94550			1	551.363	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2012	3	62.545		\$386.266	\$ 6.18	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Buildings	Electricity	Megawatt Hour	2012	4	69,107.000	235,793.084	\$2,559.000	\$ 0.04	94550			2	20,726.361	0.000	1,365.266

Utility/Fuel Consumption and Cost													Notes		Estimated GHG Emissions			
PSO	Site #	Site	Category	Subcategory	Usage Unit	FY	QTR	Usage Amount	BTU x 10^6	Cost (1,000 \$)	\$/Unit	Main Site Zip Code	Additional Information	SPO Notes	Scope	Anthropogenic MtCO ₂ e	Biogenic MtCO ₂ e	Scope 3 - T&D Loss, MtCO ₂ e
NNSA	112	LLNL	Buildings	Natural Gas	1,000 Cubic Feet	2012	4	68,062.000	69,967.736	\$138.000	\$ 0.00	94550			1	3,713.328	0.000	0.000
NNSA	112	LLNL	Buildings	Square Feet	1,000 Square Feet	2012	4	6,129.000			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Excluded	Electricity	Megawatt Hour	2012	4	43,408.000	148,108.096	\$1,607.000	\$ 0.04	94550			2	13,018.795	0.000	857.561
NNSA	112	LLNL	Excluded	Natural Gas	1,000 Cubic Feet	2012	4	9,866.000	10,142.248	\$20.000	\$ 0.00	94550			1	538.269	0.000	0.000
NNSA	112	LLNL	Excluded	Square Feet	1,000 Square Feet	2012	4	821.196			\$ -	94550			NA	0.000	0.000	0.000
NNSA	112	LLNL	Water	Potable	Million Gallons	2012	4	92.344		\$648.233	\$ 7.02	94550			NA	0.000	0.000	0.000

List of Operating On-Site Renewable Energy Systems

Requirement(s): EPAct 2005, DOE O 436.1, E.O. 13423, E.O. 13514

Instructions: Update the list of currently operating on-site renewable energy systems and address SPO requests. For additional guidance see comments in row 9 of each column and Appendix C and I of the Site Sustainability Plan Guidance. Purchased renewable energy should be listed in the "Purchased RE" worksheet. Newly proposed or potential on-site renewable energy systems should be listed in the "Conservation & RE Measures" worksheet. Edited and new data cells should be highlighted.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

System Information														
PSO	Site #	Site	System Description/Name	Location Description (e.g., building name, etc.)	System Location (Zip Code)	Year Installed (YYYY)	End Use Category	Siting Status - On Federal or Indian Land?	% of RECs Retained	On or Off Grid?	Does the site own the T&D system that delivers the electricity?	Scope 1 or 2 System?	Generator Nameplate Capacity (MW)	System Type/Category
NNSA	112	LLNL	Photovoltaic	Discovery Visitor’s Center, T1800, Lake Hausmann	94550	2003	Goal Subject	On Federal Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.001027	Solar Photovoltaic
NNSA	112	LLNL	Photovoltaic	Site-300	94550	2001	Goal Subject	On Indian Land, On User Site	100%	Electric Off Grid	Yes	Scope 1	0.000171	Solar Photovoltaic

Production/Consumption Information					Cost	Biomass Fuel Information					Notes	
Estimated Annual Renewable Electricity Output (MWh/Yr)	Estimated Annual Renewable Electricity Consumed (MWh/Yr)	Estimated Annual GHG Emissions Avoided (MtCO ₂ e/Yr)	Estimated Annual Renewable Thermal Output (10^6 BTU/Yr)	Estimated Annual Renewable Thermal Consumed (10^6 BTU/Yr)	Implementation Cost (\$)	Principal Biomass Fuel Type	Principal Biomass Fuel Use (10^6 BTU/Yr)	Secondary/ Blend Fuel Type	Secondary/ Blend Fuel Use (10^6 BTU/Yr)	Fuel Costs (\$)	Additional Information	SPO Notes
18.000	18.000	8.863		0.000								
3.000	3.000	1.477		0.000								
	0.000	0.000		0.000								
	0.000	0.000		0.000								
	0.000	0.000		0.000								
	0.000	0.000		0.000								
	0.000	0.000		0.000								
	0.000	0.000		0.000								

List of Purchased Renewable Energy

Requirement(s): EPO Act 2005, DOE O 436.1, E.O. 13423, E.O. 13514

Instructions: Update the list of purchased renewable energy resources and address SPO requests. For additional guidance see comments in row 9 of each column and Appendix C and I of the Site Sustainability Plan Guidance. On-site operational renewable energy should be listed in the "Operating On-Site Renewables" worksheet. Edited and new data cells should be highlighted.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Purchase Information											Consumption Information		Cost		Notes		
PSO	Site #	Site	Type of Renewable Energy Purchased	System Type/Category	Source Location (Zip Code)	Service Year (YYYY)	Purchase Year (FY)	End Use Category	Purchase Term	Siting Status - On Federal or Indian Land?	Total Renewable Electricity Purchased (MWh/Yr)	Estimated Annual GHG Emissions Avoided (MtCO ₂ e/Yr)	Total Renewable Thermal Purchased (10^6 BTU/Yr)	Annual Cost (\$)	\$/Unit	Additional Information	SPO Notes
NNSA	112	LLNL	Renewable Energy Credits	Wind	59036		2008	Goal Subject	Short-Term (≤ 10)		14,614.000	8,885.781		\$ 13,786.00	\$ 0.94		
NNSA	112	LLNL	Renewable Energy Credits	Wind	58413		2009	Goal Subject	Short-Term (≤ 10)		14,933.000	14,702.992		\$ 15,600.00	\$ 1.04		
NNSA	112	LLNL	Renewable Energy Credits	Wind	58413		2010	Goal Subject	Short-Term (≤ 10)		32,995.000	32,486.788		\$ 37,119.38	\$ 1.13		
NNSA	112	LLNL	Renewable Energy Credits	Wind	79566		2011	Goal Subject	Short-Term (≤ 10)		33,424.000	17,559.335		\$ 32,000.00	\$ 0.96		
NNSA	112	LLNL	Renewable Energy Credits	Wind	79566		2012	Goal Subject	Short-Term (≤ 10)		33,799.000	17,756.341		\$ 33,799.00	\$ 1.00		

Conservation and Renewable Energy Measures List

Requirement(s): EISA 2007, DOE O 436.1
Instructions: Update the list of conservations and renewable energy measures/projects and address SPO requests. For additional guidance see comments
Source: Site/Lab June 2012 EISA Sec 432 report

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0003	2009	No	TC40	Identified	Data Center Efficiency	Virtual Servers: Collocate server and storage equipment and close down remote servers rooms to reduce electrical, mechanical and maintenance costs. 86 virtual machines will be installed in B112 and will allow the removal of 700 physical servers.			No	Yes	Unknown	2011	2013	6
NNSA	112	LLNL	NNSA-0112-0004	2009	No	LLNL-TC13-01	Identified	Water & Sewer Conservation Systems	Water Conservation Systems: Install drought-tolerant plants and landscape. Recycle treated groundwater and rainwater collected from building roofs for irrigation. Upgrade irrigation system with 'smart' water controllers. Buildings 071, 111, 113, 121, 170, 482, 581.		Multiple	No	Yes	GPP	2011	2013	15

	Measurement & Verification				Source Savings/Renewable Energy Output													
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)		
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".										Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?					

\$560,000

N/A

Energy Saving E

2,491.208

0.000

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0.000

0.000

0.000

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Energy Saving E

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	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes

0.000 \$ 250,000 \$ - \$ - \$ - 1

0.000 \$ 6,682 \$ 120,000 \$ - \$ - 4

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0006	2009	No	LLNL-TC5-02	Identified	Lighting Improvements	Lighting Improvements - Interior: Install computer energy analysis hardware and software to monitor and control environmental conditions such as lighting and HVAC. Install motion detectors for indoor lighting and replace older inefficient lamps with energy efficient lamps. Multiple buildings.		Multiple	No	Yes	Other	2011	2013	24
NNSA	112	LLNL	NNSA-0112-0007	2009	No	LLNL-TC5-01	Identified	Lighting Improvements	Lighting Improvements - Exterior: Replace outdoor standard lighting with PV and LED lighting fixtures to reduce energy consumption. Multiple buildings.		Multiple	No	Yes	Unknown	2011	2013	10
NNSA	112	LLNL	NNSA-0112-0008	2009	No	LLNL-E-01	Identified	Solar Photovoltaic	Renewable Energy Photovoltaic System: Install concentrated photovoltaic systems to carry up to 25% of LLNL's Power use.			No	Yes	Unknown	2011	2013	15
NNSA	112	LLNL	NNSA-0112-0009	2009	No	LLNL-E-02	Identified	Wind	Renewable Energy - Wind Power : Install 5MW Wind turbine generators at Site 300 to make it fully self sufficient.			No	Yes	Unknown	2011	2013	15
NNSA	112	LLNL	NNSA-0112-0010	2009	No	TC30	Identified	Other	Facilities Footprint Consolidation		Multiple	Yes	No	Disposition	2007	2015	25

	Measurement & Verification					Source Savings/Renewable Energy Output											
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)	
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".									Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?				
\$ 5,000,000					Energy Saving E	20,000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
\$ 5,000,000					Fuel Switching I	20,000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	20,000.000	
\$ 35,000,000					Fuel Switching I	59,285.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	59,400.000	
\$ 15,000,000					Fuel Switching I	13,000.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	13,000.000	
\$ 80,000,000					Energy Saving E	22,928.963	0.000	0.000	410.613	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes

0.000	\$ 1,400,000	\$ -	\$ -	\$ -	2	Not a Renewable Energy Project	
0.000	\$ 1,400,000	\$ -	\$ 1,400,000	\$ -	3		
0.000	\$ 4,150,000	\$ -	\$ 4,150,000	\$ -			
0.000	\$ 910,000	\$ -	\$ 910,000	\$ -			
0.000	\$ 2,380,000	\$ -	\$ -	\$ -			

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0011	2009	No	LLNL-W-04	Identified	Water & Sewer Conservation Systems	Integration of cooling tower operations: This project will optimize the operations of the sites cooling towers to minimize water and power usage while maintaining reliability.		Multiple	Yes	No	Unknown	2011	2013	20
NNSA	112	LLNL	NNSA-0112-0012	2009	No	LLNL-TC-04	Identified	Boiler Plant Improvement	Boiler Replacement Project: Replace boilers in vaious buildings across site with new efficient boilers that also comply with newly-adopted SF Bay Area Air Quality Management District site emmision reduction requirements. Multiple buildings.		Multiple	Yes	No	M&R Indirect	2011	2013	20
NNSA	112	LLNL	NNSA-0112-0013	2009	No	TC5	Identified	Lighting Improvements	B132N/S lighting retrofit		Multiple	Yes	No	M&R Indirect	2010	2013	25
NNSA	112	LLNL	NNSA-0112-0016	2009	No	4.4	Identified	Other	High efficiency air filters		Multiple	Yes	No	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0017	2009	No	5.1	Identified	Lighting Improvements	Lighting upgrades		Multiple	Yes	No	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0018	2009	No	8.1	Identified	Electric Motors & Drives	Motor replacement with high efficiency motors		Multiple	Yes	No	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0019	2009	No	8.2	Identified	Electric Motors & Drives	Variable speed motors or drives		Multiple	Yes	Yes	Unknown	2011	2013	25

	Measurement & Verification					Source Savings/Renewable Energy Output												
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)		
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".										Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?					
\$ 500,000					Energy Saving E	4,574.443	0.000	0.000	0.000	0.000	0.000	0.000		5,411.000	0.000	0.000		
\$ 9,000,000					Energy Saving E	2,074.713	0.000	0.000	159.350	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 60,000					Energy Saving E	117.006	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 1,332,473					Energy Saving E	1,548.066	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 2,869,670					Energy Saving E	195.487	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 1,111,073					Energy Saving E	1,589.683	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 1,992,522					Energy Saving E	4,681.419	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		

	Cost Savings					Notes	
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 320,213	\$ 27,056	\$ -	\$ -		Not a renewable energy system	
0.000	\$ 100,000	\$ -	\$ -	\$ -	8		
0.000	\$ 9,239	\$ -	\$ -	\$ -			SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status
0.000	\$ 86,049	\$ -	\$ -	\$ -			
0.000	\$ 227,287	\$ -	\$ -	\$ -			
0.000	\$ 88,368	\$ -	\$ -	\$ -			
0.000	\$ 260,208	\$ -	\$ -	\$ -			

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0020	2009	No	13.1	Identified	Water & Sewer Conservation Systems	Plumbing Fixture Replacement: Replace fixtures with motion activated, low flow water conservation systems. Multiple buildings.		Multiple	Yes	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0021	2009	No	13.2	Identified	Water & Sewer Conservation Systems	Water efficient irrigation		Multiple	No	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0022	2009	No	17.1	Identified	Commissioning, Re/Retro-commissioning	Retro-commissioning services LEED EB Cert		Multiple	Yes	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0028	2009	No	4.3	Identified	Heating, Ventilating, and Air Conditioning (HVAC)	Fume hood modification		Multiple	Yes	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0005	2010	No		Identified	Data Center Efficiency	Terascale B-453 Free Cooling: - Modify existing HVAC system to utilize seasonal and nighttime cool outside air to provide free cooling, in lieu of mechanically cooled air, to the high performance computing center space.		Single	No	Yes	Unknown	2013	2014	25
NNSA	112	LLNL	NNSA-0112-0029	2010	No		Identified	Building Envelope Modifications	Building Envelope Replacement: Replace single pane windows with double pane windows, replace damaged siding and inefficient insulation. Buildings 170, 181, 551E, 551W,		Multiple	Yes	Yes	M&R Indirect	2011	2013	30

	Measurement & Verification					Source Savings/Renewable Energy Output												
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)		
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".										Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?					
\$ 1,000,000					Energy Saving E	10.702	0.000	0.000	0.192	0.000	0.000	0.000		15,869.600	0.000	0.000		
\$ 663,048					Energy Saving E	6.055	0.000	0.000	0.000	0.000	0.000	0.000		6,055.000	0.000	0.000		
\$ 388,044					Energy Saving E	486.803	0.000	0.000	8.718	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 3,527,081					Energy Saving E	11,029.066	0.000	0.000	197.509	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 6,500,000					Energy Saving E	12,017.000	0.000	0.000	0.000	0.000	0.000	0.000		6,570.000	0.000	0.000		
\$ 4,500,000					Energy Saving E	1,428.571	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		

	Cost Savings					Notes	
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 163,346	\$ 79,348	\$ -	\$ -	9		
0.000	\$ 6,055	\$ 30,275	\$ -	\$ -			
0.000	\$ 40,127	\$ -	\$ -	\$ -		B111, B121, B123, B166, B191, B211, B235, B241, B253, B281, B311, B361, B364, B365, B451, B453, B543, B663, B693, B695, T3725, B132N&S, 551E, 551W	
0.000	\$ 650,977	\$ -	\$ -	\$ -			
0.000	\$ 525,000	\$ 57,850	\$ -	\$ -	6	B453	
0.000	\$ 30,000	\$ -	\$ -	\$ -	7	Buildings 170, 181, 551E, 551W,	

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0030	2010	No		Identified	Renewable Energy Assessment	Renewable Energy Project Development: Feasibility planning to develop solar, wind and fuel cells packages for third party financing. Projects include 10 MW solar panels at Site 200 and 10 MW solar panels at Site 300, 30 MW wind farm at Site 300, and three 400KW fuel cell units that will tie into the 13.8KV electrical system at Site 200.			No	Yes	Unknown	2011	2013	N/A
NNSA	112	LLNL	NNSA-0112-0031	2010	No		Identified	Water & Sewer Conservation Systems	Water Conservation Systems: Install drought-tolerant plants and landscape.		Multiple	Yes	No	Unknown	2011	2013	30
NNSA	112	LLNL	NNSA-0112-0032	2010	No		Identified	Water & Sewer Conservation Systems	Water Conservation Systems: Upgrade irrigation system with 'smart' water controllers.		Multiple	Yes	Yes	Unknown	2011	2013	20
NNSA	112	LLNL	NNSA-0112-0033	2010	No	3.1	Identified	Building Automation Systems/EMCS	Energy Management Control System Improvement		Multiple	Yes	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0034	2010	No	4.4	Identified	Other	High efficiency air filters		Multiple	Yes	No	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0035	2010	No	8.2	Identified	Electric Motors & Drives	Variable speed motors or drives		Multiple	Yes		Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0036	2010	No	17.1	Identified	Commissioning, Re/Retro-commissioning	Retro-commissioning services LEED EB Cert		Multiple	Yes	Yes	Unknown	2011	2013	25
NNSA	112	LLNL	NNSA-0112-0037	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B113 (HVAC & Lighting)		Single	No	No	Unknown	2012	2013	10

	Measurement & Verification					Source Savings/Renewable Energy Output											
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)	
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".									Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?				
\$ 400,000					Fuel Switching I	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 200,000					Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		5,000.000	0.000	0.000	
\$ 100,000					Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2,500.000	0.000	0.000	
\$ 3,489,118					Energy Saving E	8,821.158	0.000	0.000	157.970	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 444,158					Energy Saving E	1,548.066	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 199,252					Energy Saving E	4,681.419	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 201,783					Energy Saving E	486.803	0.000	0.000	8.718	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 97,285					Energy Saving E	551.280	0.000	5,490.300	0.000	0.000	0.000	0.000		0.000	0.000	0.000	

	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ -	\$ -	\$ -	\$ -	10		
0.000	\$ -	\$ 25,000	\$ -	\$ -	11		
0.000	\$ -	\$ 12,500	\$ -	\$ -	12		
0.000	\$ 986,543	\$ -	\$ -	\$ -		B115, B117, B125, B170, B191, B411, B438, B439, B543	
0.000	\$ 11,620	\$ -	\$ -	\$ -		B391, B543	
0.000	\$ 41,416	\$ -	\$ -	\$ -		B391, B691	
0.000	\$ 27,867	\$ -	\$ -	\$ -		B115, B117, B181, B191, B194, B391, B411, B438, B471, B543, B583, B691, U325	
0.000	\$ 81,263	\$ -	\$ -	\$ -			

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0038	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B115 (HVAC & Lighting) ON HOLD		Single	No	No	Unknown	2012	2013	10
NNSA	112	LLNL	NNSA-0112-0039	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B170 (HVAC) COMPLETED		Single	No	No	Unknown	2012	2012	10
NNSA	112	LLNL	NNSA-0112-0040	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B191 (HVAC)		Single	No	Yes	Unknown	2013	2013	10
NNSA	112	LLNL	NNSA-0112-0041	2011	No		Identified	Energy Audit	Facility Audit Recommendations - U291 (Operations)		Single	No	Yes	Unknown	2012	2012	10
NNSA	112	LLNL	NNSA-0112-0042	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B391 ((HVAC)		Single	No	No	Unknown	2012	2012	10
NNSA	112	LLNL	NNSA-0112-0043	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B471 (HVAC) COMPLETED		Single	No	No	Unknown	2012	2012	10
NNSA	112	LLNL	NNSA-0112-0044	2011	No		Identified	Energy Audit	Facility Audit Recommendations - B691 (HVAC)		Single	No	Yes	Unknown	2012	2012	10
NNSA	112	LLNL	NNSA-0112-0014	2009	No	LLNL-W-01	Verified	Water & Sewer Conservation Systems	Water Reclamation System: Install a modular sewage treatment system to provide irrigation water. Upgrade the irrigation piping system for reclaimed water distribution.			No	Yes	Unknown	2013	2015	25

	Measurement & Verification					Source Savings/Renewable Energy Output												
(s)	(t)	(v)			(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)		
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".										Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?					
\$ 31,052					Energy Saving E	309.780	0.000	1,845.200	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 66,734					Energy Saving E	167.380	0.000	3,415.200	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 324,453					Energy Saving E	737.920	0.000	6,202.200	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 442,248					Energy Saving E	3,796.040	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 137,509					Energy Saving E	1,551.010	0.000	4,021.900	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 5,406					Energy Saving E	206.040	0.000	1,982.700	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 50,477					Energy Saving E	480.810	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 9,800,000					Energy Saving E	254.804	0.000	0.000	4.563	0.000	0.000	0.000		95,000.000	0.000	0.000		

	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 36,103	\$ -	\$ -	\$ -		ON HOLD	
0.000	\$ 38,151	\$ -	\$ -	\$ -		COMPLETED	
0.000	\$ 106,941	\$ -	\$ -	\$ -			
0.000	\$ 268,077	\$ -	\$ -	\$ -			
0.000	\$ 153,067	\$ -	\$ -	\$ -			
0.000	\$ 29,837	\$ -	\$ -	\$ -		COMPLETED	
0.000	\$ 33,956	\$ -	\$ -	\$ -			
0.000	\$ 26,449	\$ 475,000	\$ -	\$ -	5		

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0001	2009	No	3.1	Awarded/Approv	Building Automation Systems/EMCS	Energy Management Control System Improvement COMPLETED		Multiple	Yes	Yes	ESPC	2008	2012	25
NNSA	112	LLNL	NNSA-0112-0002	2009	No	3.2	Awarded/Approv	Advanced Metering System	Electrical Metering Installation COMPLETED		Multiple	Yes	Yes	ESPC	2008	2012	25
NNSA	112	LLNL	NNSA-0112-0015	2009	No	TC30	Cancelled	Other	Facilities Footprint Consolidation		Multiple			N/A			
NNSA	112	LLNL	NNSA-0112-0023	2009	No	N/A	Cancelled	Boiler Plant Improvement	Secure boilers		N/A	N/A	N/A	N/A	N/A	N/A	N/A
NNSA	112	LLNL	NNSA-0112-0024	2009	No	N/A	Cancelled	Data Center Efficiency	PC shutdown		N/A	N/A	N/A	N/A	N/A	N/A	N/A
NNSA	112	LLNL	NNSA-0112-0025	2009	No	N/A	Cancelled	Boiler Plant Improvement	Boiler replacement project		N/A	N/A	N/A	N/A	N/A	N/A	N/A
NNSA	112	LLNL	NNSA-0112-0026	2009	No	N/A	Cancelled	Other	Cold and dark facilities		N/A	N/A	N/A	N/A	N/A	N/A	N/A
NNSA	112	LLNL	NNSA-0112-0027	2009	No	N/A	Cancelled	Energy Related Process Improvements	Vending machine energy management controls		N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Measurement & Verification					Source Savings/Renewable Energy Output											
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)	
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".									Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?				
\$ 5,820,050	Yes	Continuous			Energy Saving E	8,821.158	0.000	0.000	157.970	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 2,365,076	Yes	Continuous			Energy Saving E	5,071.805	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 15,000,000					Energy Saving E	22,928.963	0.000	0.000	410.613	0.000	0.000	0.000				0.000	
\$ 150,000	N/A	N/A			Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 5,000	N/A	N/A			Energy Saving E	4.991	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 9,000,000	N/A	N/A			Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
	N/A	N/A			Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 22,000	N/A	N/A			Energy Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	

	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 937,572	\$ -	\$ -	\$ -		COMPLETED	SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status
0.000	\$ 358,060	\$ -	\$ -	\$ -		COMPLETED	SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status
	\$ 2,450,000			\$ -	Duplicate		
	\$ -	\$ -		\$ -			
	\$ -	\$ -		\$ -			
	\$ -	\$ -		\$ -			
	\$ -	\$ -		\$ -			
	\$ -	\$ -		\$ -			

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL	NNSA-0112-0045	2012	No		Awarded/Approved	Heating, Ventilating, and Air Conditioning (HVAC)	Thermostat Initiative: Install 700 programmable thermostats at 95 facilities COMPLETED		Multiple	No	Yes	M&R Indirect	2011	2011	15
NNSA	112	LLNL	NNSA-0112-0046	2012	No		Awarded/Approved	Lighting Improvements	Lighting Improvements - Exterior: Replace 200 exterior parking and street lighting with LED lighting fixtures to reduce energy consumption. COMPLETED		Multiple	No	Yes	M&R Indirect	2011	2011	15
NNSA	112	LLNL	NNSA-0112-0047	2012	No		Awarded/Approved	Water & Sewer Conservation Systems	Install 1,800 sink aerators at restrooms and kitchen faucets.		Multiple	No	Yes	M&R Indirect	2011	2013	15
NNSA	112	LLNL	NNSA-0112-0048	2012	No		Awarded/Approved	Lighting Improvements	Lighting Occupancy Sensor Test and Survey COMPLETED		Multiple	No	No	M&R Indirect	2011	2012	25
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B112 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - U325 (Operations)		Single	No	No	TBD	2013	2013	15
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B153 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B231 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15

	Measurement & Verification					Source Savings/Renewable Energy Output											
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)	
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".									Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?				
\$ 328,000					Energy Saving E	1,700.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 225,000					Energy Saving E	184.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 10,000					Water Saving E	0.000	0.000	0.000	0.000	0.000	0.000	0.000		2,000.000	0.000	0.000	
\$ 60,000					Energy Saving E	500.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 1,040,026					Energy Saving E	2,550.001	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 212,800					Energy Saving E	3,472.920	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 105,888					Energy Saving E	383.955	0.000	786.809	0.000	0.000	0.000	0.000		0.000	0.000	0.000	
\$ 1,322,000					Energy Saving E	1,573.051	0.000	4,236.663	0.000	0.000	0.000	0.000		0.000	0.000	0.000	

	Cost Savings				Notes		
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 119,000	\$ -	\$ -	\$ -		COMPLETED	SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status
0.000	\$ 12,880	\$ -	\$ -	\$ -		COMPLETED	SPO Note: Completion year on or before 2011, please verify/update conservation measure status; Completion year on or before 2011, please verify/update conservation measure status
0.000	\$ -	\$ 26,000	\$ -	\$ -			
0.000	\$ 35,000	\$ -	\$ -	\$ -		COMPLETED	
0.000	\$ 179,383	\$ -	\$ -	\$ -			
0.000	\$ 245,258	\$ -	\$ -	\$ -			
0.000	\$ 33,300	\$ -	\$ -	\$ -			
0.000	\$ 158,034	\$ -	\$ -	\$ -			

Measure/Project Description												Funding Overview					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
PSO	Site #	Site	HQ Measure #	If Covered, EISA S432 Reporting Year (YYYY)	Has this measure been included in an official DOE budget requests? If yes, provide Project/Measure #	Site Project #	Conservation Measure(s) Status	Conservation Measure(s) Type	Conservation Measure(s) Name or Description	Measure(s) Location (Zip Code)	Is this a multiple or single facility ECM?	Does the measure contribute to the reduction of deferred maintenance?	Is this effort/measure beyond typical O&M improvement to meet a goal?	Funding Source/Type (Actual or Potential)	Starting Year of Measure Implementation (Anticipated or Actual - YYYY)	Completion/ Operational Year of Measure (Anticipated or Actual -- YYYY)	Estimated Service Life
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B151 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15
NNSA	112	LLNL		2012	No		Cancelled	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - OS454 (Operations)		Single	No	No	TBD	N/A	N/A	N/A
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B298 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15
NNSA	112	LLNL		2012	No		Identified	Audit/Evaluation (Energy, Water)	Facility Audit Recommendations - B490 (HVAC & Lighting)		Single	No	No	TBD	2013	2013	15

	Measurement & Verification					Source Savings/Renewable Energy Output												
(s)	(t)	(u)	(v)		(w)	(x)	(y)	(z)	(aa)	(ab)	(ac)	(ad)	(ae)	(af)	(ag)	(ah)		
Estimated Implementation Cost (\$)	Are there plans to measure and verify the performance of this measure?	If M&V has been			Is this a energy saving measure or renewable energy system?	Provide estimated energy saved or switched for each energy type, as applicable. If there are no savings associated with the measure enter "0".										Estimated Annual Potable Water Savings (10^3 Gal/Yr)	Estimated Annual ILA (Non-Potable Freshwater) Savings (10^3 Gal/Yr)	Estimated Annual Renewable Electricity Output (MWh/Yr)
		Type of M&V	MM	YYYY		Estimated Annual Electricity Saved (MWh/Yr)	Estimated Annual Fuel Oil Saved (10^3 Gal/Yr)	Estimated Annual Natural Gas Saved (10^3 Cf/Yr)	Estimated Annual LPG/Propane Saved (10^3 Gal/Yr)	Estimated Annual Coal Saved (Short Ton/Yr)	Estimated Annual Steam Saved (10^9 BTU/Yr)	Estimated Annual Other Saved (10^9 BTU/Yr)	If "Other", what is "Other"?					
\$ 1,125,463					Energy Saving E	1,371.585	0.000	15,037.924	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
N/A	N/A	N/A			Energy Saving E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
\$ 587,729					Energy Saving E	2,188.103	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000		
\$ 1,121,419					Energy Saving E	1,359.517	0.000	8,144.035	0.000	0.000	0.000	0.000		0.000	0.000	0.000		

	Cost Savings					Notes	
(ai)	(aj)	(ak)	(al)	(am)	(an)	(ao)	(ap)
Estimated Annual Renewable Thermal Output (10^9 BTU/Yr)	Estimated Annual Energy Cost Savings (\$/Yr)	Estimated Annual Water Cost Savings (\$/Yr)	Estimated Annual Cost Savings (\$/Yr) from switching to a renewable energy source	Estimated Annual Ancillary Cost Savings (\$/Yr)	Site Priority	Additional Information	SPO Comments/Notes
0.000	\$ 216,398	\$ -	\$ -	\$ -			
N/A	N/A	N/A	N/A	N/A		Impacts mission, not recommended for implementation at this time.	
0.000	\$ 154,525	\$ -	\$ -	\$ -			
0.000	\$ 160,746	\$ -	\$ -	\$ -			

Building Inventory Changes, HPSB Compliance and Projected Utilities Consumption

Requirement(s): EPAet 2005, EISA 2007, DOE O 436.1

Instructions: Update this worksheet with information on new building construction, major renovation, replacements, and buildings that are to be disposed of in the near future, and address SPO requests. For additional guidance see comments in row 9 of each column and Appendix C of the Site Sustainability Plan Guidance. Edited and new data cells should be highlighted.

Source: Site/Lab

Basic Information																			For compliance with Sec 438 of EISA	For compliance with DOE O 436.1	Complete this section if <i>new</i> building project was CD-1 or lower on <u>10/1/06</u>		Complete this section if construction has been completed	Notes			
PSO	Site #	Site	Project ID	Building/Project Name	Location (Zip Code)	Planned or Actual CD-2 Date (MM/YY)	Current CD Status	Total Project Cost (\$ M)	Number/Type of Facilities	Facility Change Status	Anticipated Electricity Usage (kWh/Yr)	Anticipated Natural Gas Usage (10^3 Cubic Feet/Yr)	Estimated Annual GHG Emissions Avoided (MtCO ₂ e/Yr)	Anticipated Potable Water Usage (10^3 Gal/Yr)	Anticipated ILA Water Usage (10^3 Gal/Yr)	Excluded from Energy Intensity?	Expected Building Occupancy or Removal Year (YYYY)	Anticipated Square Footage	If > 5,000 sq ft, will it maintain or restore pre- development hydrology?	What GP equivalency will the building achieve?	Estimated percentage below ASHRAE Std 90.1 in terms of energy use	If not at least 30% below ASHRAE Std 90.1, will design achieve maximum level of energy efficiency that is life-cycle cost-effective?	In terms of energy use, percentage below ANSI/ASHRAE/IESNA Standard 90.1 achieved	Additional Information	SPO Comments/Notes		
NNSA	112	LLNL																									
TBD																											

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Source Energy Savings Credit

Requirement(s): E.O. 13123

Instructions: Optional, complete the tables below for projects that increase site energy use but save source energy. For additional guidance see: http://www.eere.energy.gov/femp/pdfs/sec502e_%20guidance.pdf. Edited and new data cells should be highlighted.

Source: Site/Lab

EPACT Goal Subject Buildings

Name of Project Saving Source Energy in FY 2011 (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(10 ⁶ BTU/Yr)	(10 ⁶ BTU/Yr)	(10 ⁶ BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

EPACT Excluded Buildings

Name of Project Saving Source Energy in FY 2011 (insert additional rows as necessary)	Annual Site Energy Increase with the Project	Annual Source Energy Saved with the Project	Adjustment to Annual Site Energy
	(10 ⁶ BTU/Yr)	(10 ⁶ BTU/Yr)	(10 ⁶ BTU/Yr)
Project No. 1	0.0	0.0	0.0
Project No. 2	0.0	0.0	0.0
Project No. 3	0.0	0.0	0.0
Totals	0.0	0.0	0.0

Data Centers

Requirement(s): EISA 2007, DOE O 436.1

Instructions: Update the list of data centers and complete all fields, if not using DOEGRIT. For additional guidance see comments in row 9 of each column and Appendix C of the Site Sustainability Plan Guidance.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Basic Information																		IT Fac					
PSO	Site #	Site	GOCO / FED	Data Center Name	Data Center Function	Assigned DCEP POC	Data Center POC	Target Date for Closure (CY) (If Scheduled)	Phase of Closure	Street Address	Street Address 2	City	State	Zip Code	Country	Gross Floor Area (Sq.Ft.)	Facility Cost (\$/Sq.Ft. /Yr)	Electricity Included in Cost? (Y/N)	Data Center Tier / Type	Electricity Metered (Y/N)	Total Data Center (Facility) Power Capacity (kW)	Average Data Center Electricity Usage (kWh)	Total Data Center IT Power Capacity (kW)
NNSA	112	LLNL	GOCO	B-111 R-170	General	Paul C Dickinson (925-	Scott M Taylor (925-	Q4 / 2014	Stage 1:	7000 East Ave		Livermore	Ca	94550	USA	794	\$15.13	Yes	2: Tier II	No	135.000	85.000	65.000
NNSA	112	LLNL	GOCO	B-111 R-178	General	Paul C Dickinson (925-	Scott M Taylor (925-	Q4 / 2014	Stage 1:	7000 East Ave		Livermore	Ca	94550	USA	564	\$15.13	Yes	2: Tier II	No	100.000	75.000	65.000
NNSA	112	LLNL	GOCO	B-112 R-1250	General	William E Maciel (925-	Andy Ashbaugh			7000 East Ave		Livermore	Ca	94550	USA	15,476	\$29.06	Yes	3: Tier III	Yes	7,000.000	850.000	580.000
NNSA	112	LLNL	GOCO	B-112 R-B126	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	914	\$29.06	Yes	2: Tier II	Yes	850.000	425.000	250.000
NNSA	112	LLNL	GOCO	B-112 R-B137	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	1,076	\$29.06	Yes	2: Tier II	Yes	850.000	425.000	250.000
NNSA	112	LLNL	GOCO	B-112 R-B140	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	1,960	\$29.06	Yes	2: Tier II	Yes	1,250.000	625.000	450.000
NNSA	112	LLNL	GOCO	B-112 R-B140A	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	560	\$29.06	Yes	2: Tier II	Yes	225.000	112.500	110.000
NNSA	112	LLNL	GOCO	B-112 R-B151	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	1,069	\$29.06	Yes	2: Tier II	Yes	500.000	250.000	200.000
NNSA	112	LLNL	GOCO	B-115 R-1410	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	2,413	\$47.49	Yes	2: Tier II	No	541.000	48.000	65.000
NNSA	112	LLNL	GOCO	B-115 R-1465	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	1,443	\$47.49	Yes	2: Tier II	No	323.000	28.000	33.000
NNSA	112	LLNL	GOCO	B-115 R-1469	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	904	\$47.49	Yes	2: Tier II	No	202.000	18.000	33.000
NNSA	112	LLNL	GOCO	B-115 R-1475	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	972	\$47.49	Yes	2: Tier II	No	218.000	19.000	33.000
NNSA	112	LLNL	GOCO	B-115 R-1506	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	3,178	\$47.49	Yes	2: Tier II	No	713.000	62.000	65.000
NNSA	112	LLNL	GOCO	B-117 R-1812	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	1,094	\$60.74	Yes	2: Tier II	No	304.905	91.000	115.000
NNSA	112	LLNL	GOCO	B-117 R-1824	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	1,611	\$60.74	Yes	2: Tier II	No	448.997	135.000	115.000
NNSA	112	LLNL	GOCO	B-117 R-1907	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550	USA	2,677	\$60.74	Yes	2: Tier II	No	746.098	224.000	220.000
NNSA	112	LLNL	GOCO	B-121 R-1146	General	Gregory A Cooper (925-423-8512)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	672	\$19.45	Yes	2: Tier II	No	140.000	70.000	65.000
NNSA	112	LLNL	GOCO	B-121 R-1347	General	David L Parker (925-422-4607)	Brian Van Hook (925-422-2737)			7000 East Ave		Livermore	Ca	94550	USA	2,000	\$19.45	Yes	2: Tier II	No	300.000	150.000	450.000
NNSA	112	LLNL	GOCO	B-131 R-2037A	General	Gregory A Cooper (925-423-8512)	David D Cardenas (925-424-3283)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	1,140	\$18.64	Yes	2: Tier II	No	200.000	100.000	80.000
NNSA	112	LLNL	GOCO	B-131 R-2259A	General	Gregory A Cooper (925-423-8512)	David D Cardenas (925-424-3283)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	1,421	\$18.64	Yes	2: Tier II	No	325.000	162.500	90.000
NNSA	112	LLNL	GOCO	B-131 R-2280	General	Gregory A Cooper (925-423-8512)	Brian Van Hook (925-422-2737)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	1,956	\$18.64	Yes	2: Tier II	No	400.000	200.000	180.000
NNSA	112	LLNL	GOCO	B-131 R-2362	General	Gregory A Cooper (925-423-8512)	David D Cardenas (925-424-3283)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	770	\$18.64	Yes	2: Tier II	No	125.000	62.500	65.000
NNSA	112	LLNL	GOCO	B-132N R-1470B	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	743	\$15.68	Yes	2: Tier II	No	220.000	110.000	65.000
NNSA	112	LLNL	GOCO	B-132S R-1521	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	839	\$16.16	Yes	2: Tier II	No	200.000	100.000	65.000
NNSA	112	LLNL	GOCO	B-132S R-2205	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	923	\$16.16	Yes	2: Tier II	No	65.000	32.500	32.000
NNSA	112	LLNL	GOCO	B-132S R-2500	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	500	\$16.16	Yes	2: Tier II	No	65.000	32.500	33.000
NNSA	112	LLNL	GOCO	B-132S R-2506	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	2,204	\$16.16	Yes	2: Tier II	No	400.000	200.000	115.000
NNSA	112	LLNL	GOCO	B-140 R-1079	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	1,700	\$17.75	Yes	2: Tier II	No	325.000	162.500	115.000
NNSA	112	LLNL	GOCO	B-170 R-1008	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550	USA	973	\$13.60	Yes	2: Tier II	No	150.000	75.000	65.000

ilities, Energy					Physical Servers										Virtualization				Network Storage				Notes	
Average IT Electricity Usage (kWh)	Cost Per kWh (if known)	Watts per Sq.ft.	Estimated Power Usage Effectiveness (PUE)	Has A DC Pro Assessment been Conducted?	Current Rack Count (#)	Sq. Ft. per Rack	Super Computers or HPC Systems	Mainframes (IBM or compatible)	Mainframes (Other)	Windows Servers	Unix Servers	Linux Servers	Other	Total Physical Server Count (#)	Total Virtual Host Count (#)	Total Virtual OS Count (#)	Total Operating Systems Count (#)	Average CPU Utilization of All Physical Servers	SAN/NAS/ DAS - Total (TB)	SAN/NAS/ DAS - Used (TB)	Percent Used	Additional Information		
35.000	\$0.06	44.08	2.43	No		Incomplete								0			0				Incomplete	Director's Office. Closure plan to		
25.000	\$0.06	44.33	3.00	No		Incomplete								0			0				Incomplete	Director's Office. Closure plan to		
400.000	\$0.06	25.85	2.13	Yes		Incomplete								0			0				Incomplete	Computer Center		
165.000	\$0.06	180.53	2.58	No		Incomplete								0			0				Incomplete	Computer Center		
150.000	\$0.06	139.41	2.83	No		Incomplete								0			0				Incomplete	Computer Center		
225.000	\$0.06	114.80	2.78	No		Incomplete								0			0				Incomplete	Computer Center		
55.000	\$0.06	98.21	2.05	No		Incomplete								0			0				Incomplete	Computer Center		
100.000	\$0.06	93.55	2.50	No		Incomplete								0			0				Incomplete	Computer Center		
22.000	\$0.06	9.12	2.18	No	17	142	17	0	0	0	0	0	0	17	0	0	17	97%			Incomplete	Computation Facility Building		
15.000	\$0.06	10.40	1.87	No	6	241	6	0	0	0	0	0	0	6	0	0	6	97%			Incomplete	Computation Facility Building		
8.000	\$0.06	8.85	2.25	No	22	41	220	0	0	0	0	0	0	220	0	0	220	97%			Incomplete	Computation Facility Building		
10.000	\$0.06	10.29	1.90	No	10	97	10	0	0	0	0	0	0	10	0	0	10	97%			Incomplete	Computation Facility Building		
30.000	\$0.06	9.44	2.07	No	23	138	23	0	0	0	0	0	0	23	0	0	23	97%			Incomplete	Computation Facility Building		
65.000	\$0.06	59.41	1.40	No	4	274	4	0	0	0	0	0	0	4	0	0	4	97%			Incomplete	Computation Facility Building		
90.000	\$0.06	55.87	1.50	No	17	95	17	0	0	0	0	0	0	17	0	0	17	97%			Incomplete	Computation Facility Building		
150.000	\$0.06	56.03	1.49	No	21	127	21	0	0	0	0	0	0	21	0	0	21	97%			Incomplete	Computation Facility Building		
32.500	\$0.06	48.36	2.15	No		Incomplete								0			0	15%			Incomplete	PLS Office		
59.400	\$0.06	29.70	2.53	No	36	56	0	0	0	10	14	74	5	103	0	0	103	15%	90	73	81%	PLS Office		
40.000	\$0.06	35.09	2.50	No		Incomplete								0			0	30%			Incomplete	Engineering. Closure plan to be developed FY13.		
45.000	\$0.06	31.67	3.61	No		Incomplete								0			0	30%			Incomplete	Engineering. Closure plan to be developed FY13.		
75.000	\$0.06	38.34	2.67	No	34	58	0	0	0	40	7	60	4	120	9	272	383	30%	367	225	61%	Engineering. Closure plan to be developed FY13.		
32.500	\$0.06	42.21	1.92	No		Incomplete								0			0	30%			Incomplete	Engineering. Closure plan to be developed FY13.		
32.500	\$0.06	43.74	3.38	No		Incomplete								0			0				Incomplete	Global Security		
32.500	\$0.06	38.74	3.08	No		Incomplete								0			0				Incomplete	Global Security		
16.000	\$0.06	17.33	2.03	No		Incomplete								0			0				Incomplete	Global Security		
16.500	\$0.06	33.00	1.97	No		Incomplete								0			0				Incomplete	Global Security		
57.500	\$0.06	26.09	3.48	No		Incomplete								0			0				Incomplete	Global Security		
57.500	\$0.06	33.82	2.83	No		Incomplete								0			0				Incomplete	Global Security		
32.500	\$0.06	33.40	2.31	No		Incomplete								0			0				Incomplete	NARAC Facility		

Basic Information																							IT Fac	
PSO	Site #	Site	GOCO / FED	Data Center Name	Data Center Function	Assigned DCEP POC	Data Center POC	Target Date for Closure (CY) (If Scheduled)	Phase of Closure	Street Address	Street Address 2	City	State	Zip Code	Country	Gross Floor Area (Sq.Ft.)	Facility Cost (\$/Sq.Ft. /Yr)	Electricity Included in Cost? (Y/N)	Data Center Tier / Type	Electricity Metered (Y/N)	Total Data Center (Facility) Power Capacity (kW)	Average Data Center Electricity Usage (kWh)	Total Data Center IT Power Capacity (kW)	
NNSA	112	LLNL	GOCO	B-170 R-1018	General	Eric D Carlberg (925-423-0139)	Stanley D Ruppert (925-423-7552)			7000 East Ave		Livermore	Ca	94550 USA		1,745	\$13.60	Yes	2: Tier II	No	250.000	125.000	65.000	
NNSA	112	LLNL	GOCO	B-191 R-2210	General	Christopher H Adams (925-423-1242)	Linda Oribello	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		600	\$24.28	Yes	2: Tier II	No	200.000	100.000	65.000	
NNSA	112	LLNL	GOCO	B-216 R-185	General	Paul C Dickinson (925-422-9130)	Travis T Martin (925-422-1089)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		1,039	\$16.07	Yes	2: Tier II	No	350.000	175.000	115.000	
NNSA	112	LLNL	GOCO	B-256 R-1000	General	William E Maciel (925-423-1900)	David L Lima (925-422-0919)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		2,313	\$30.30	Yes	2: Tier II	No	400.000	200.000	144.000	
NNSA	112	LLNL	GOCO	B-271 R-B120	General	Paul C Dickinson (925-422-9130)	Rick D Warrick (925-423-7315)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		1,791	\$31.84	Yes	2: Tier II	No	325.000	162.500	115.000	
NNSA	112	LLNL	GOCO	B-439 R-1030	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		6,364	\$61.15	Yes	2: Tier II	No	2,000.000	750.000	500.000	
NNSA	112	LLNL	GOCO	B-451 R-1050	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		18,075	\$42.24	Yes	2: Tier II	Yes	5,500.000	1,900.000	4,000.000	
NNSA	112	LLNL	GOCO	B-451 R-1056	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		855	\$42.24	Yes	2: Tier II	Yes	350.000	200.000	180.000	
NNSA	112	LLNL	GOCO	B-453 R-1211 ASL	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		1,585	\$32.14	Yes	2: Tier II	Yes	125.000	39.000	26.000	
NNSA	112	LLNL	GOCO	B-453 R-2100 USR	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		2,246	\$32.14	Yes	2: Tier II	Yes	500.000	76.000	50.000	
NNSA	112	LLNL	GOCO	B-453 R-2125 CSR	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		1,082	\$32.14	Yes	2: Tier II	Yes	300.000	47.000	30.000	
NNSA	112	LLNL	GOCO	B-453 R-2201 West	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		24,427	\$32.14	Yes	2: Tier II	Yes	15,000.000	1,600.000	1,050.000	
NNSA	112	LLNL	GOCO	B-453 R-2251 East	HPC	Anna Maria Bailey (925-423-1288)	John B Sines (925-423-2617)			7000 East Ave		Livermore	Ca	94550 USA		24,424	\$32.14	Yes	2: Tier II	Yes	15,000.000	2,400.000	1,608.000	
NNSA	112	LLNL	GOCO	B-490 R-1012	General	Barbara A Quivey (925-422-1545)	Bob Demaret (925-423-6768)			7000 East Ave		Livermore	Ca	94550 USA		1,640	\$27.74	Yes	2: Tier II	No	325.000	162.500	115.000	
NNSA	112	LLNL	GOCO	B-490 R-1015	General	Barbara A Quivey (925-422-1545)	Bob Demaret (925-423-6768)			7000 East Ave		Livermore	Ca	94550 USA		1,498	\$27.74	Yes	2: Tier II	No	325.000	162.500	115.000	
NNSA	112	LLNL	GOCO	B-490 R-1018	General	Barbara A Quivey (925-422-1545)	Bob Demaret (925-423-6768)			7000 East Ave		Livermore	Ca	94550 USA		1,461	\$27.74	Yes	2: Tier II	No	325.000	162.500	115.000	
NNSA	112	LLNL	GOCO	B-511 R-118A	General	William E Maciel (925-423-1900)	David W Lavinsky (925-423-6538)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		649	\$14.25	Yes	2: Tier II	No	50.000	25.000	20.000	
NNSA	112	LLNL	GOCO	B-543 R-1073	General	William E Maciel (925-423-1900)	Russell A Baine (925-422-3928)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		1,742	\$16.86	Yes	2: Tier II	No	125.000	62.500	33.000	
NNSA	112	LLNL	GOCO	B-551W R-1550A	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550 USA		1,450	\$16.97	Yes	2: Tier II	No	125.000	62.500	32.000	
NNSA	112	LLNL	GOCO	B-551W R-2266	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550 USA		560	\$16.97	Yes	2: Tier II	No	60.000	30.000	18.000	
NNSA	112	LLNL	GOCO	B-551W R-2310	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550 USA		798	\$16.97	Yes	2: Tier II	No	60.000	30.000	16.000	
NNSA	112	LLNL	GOCO	B-581 R-1016	General	Barbara A Quivey (925-422-1545)	Bob Demaret (925-423-6768)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		774	\$7.94	Yes	2: Tier II	No	100.000	50.000	33.500	
NNSA	112	LLNL	GOCO	T-2580 R-1003	General	William E Maciel (925-423-1900)	David L Lima (925-422-0919)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		1,387	\$17.35	Yes	2: Tier II	No	200.000	100.000	65.000	
NNSA	112	LLNL	GOCO	T-2580 R-2000	General	William E Maciel (925-423-1900)	David L Lima (925-422-0919)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550 USA		561	\$17.35	Yes	2: Tier II	No	50.000	25.000	18.000	

ilities, Energy					Physical Servers										Virtualization				Network Storage			Notes
Average IT Electricity Usage (kWh)	Cost Per kWh (if known)	Watts per Sq.ft.	Estimated Power Usage Effectiveness (PUE)	Has A DC Pro Assessment been Conducted?	Current Rack Count (#)	Sq. Ft. per Rack	Super Computers or HPC Systems	Mainframes (IBM or compatible)	Mainframes (Other)	Windows Servers	Unix Servers	Linux Servers	Other	Total Physical Server Count (#)	Total Virtual Host Count (#)	Total Virtual OS Count (#)	Total Operating Systems Count (#)	Average CPU Utilization of All Physical Servers	SAN/NAS/ DAS - Total (TB)	SAN/NAS/ DAS - Used (TB)	Percent Used	Additional Information
32.500	\$0.06	18.62	3.85	No		Incomplete								0			0				Incomplete	NARAC Facility
32.500	\$0.06	54.17	3.08	No		Incomplete								0			0				Incomplete	HEAF. Closure plan to be developed FY13.
57.500	\$0.06	55.34	3.04	No		Incomplete								0			0				Incomplete	Cyber Security. Closure plan to be developed FY13.
72.000	\$0.06	31.13	2.78	No		Incomplete								0			0				Incomplete	Telcom Node #1. Closure plan to be developed FY13.
57.500	\$0.06	32.10	2.83	No		Incomplete								0			0				Incomplete	Protective Force. Closure plan to be developed FY13.
425.000	\$0.06	66.78	1.76	No	123	52	123	0	0	0	0	0	0	123	0	0	123	97%			Incomplete	Institutional Computing / Archives
1,200.000	\$0.06	66.39	1.58	No	276	65	276	0	0	0	0	0	0	276	0	0	276	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
80.000	\$0.06	93.57	2.50	No	8	107	8	0	0	0	0	0	0	8	0	0	8	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
25.000	\$0.06	15.77	1.56	No		Incomplete								0			0	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
45.000	\$0.06	20.04	1.69	No	47	48	47	0	0	0	0	0	0	47	0	0	47	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
30.000	\$0.06	27.73	1.57	No	29	37	29	0	0	0	0	0	0	29	0	0	29	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
1,200.000	\$0.06	49.13	1.33	No	341	72	341	0	0	0	0	0	0	341	0	0	341	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
1,800.000	\$0.06	73.70	1.33	No	292	84	292	0	0	0	0	0	0	292			292	97%			Incomplete	Benchmarked through the http://hightech.lbl.gov/datacenters.html
57.500	\$0.06	35.06	2.83	No		Incomplete								0			0				Incomplete	IMF Managed Lab Facility
57.500	\$0.06	38.38	2.83	No		Incomplete								0			0				Incomplete	IMF Managed Lab Facility
57.500	\$0.06	39.36	2.83	No		Incomplete								0			0				Incomplete	IMF Managed Lab Facility
10.000	\$0.06	15.41	2.50	No		Incomplete								0			0				Incomplete	MUSD. Closure plan to be developed FY13.
16.500	\$0.06	9.47	3.79	No		Incomplete								0			0				Incomplete	O&B / PFS / SHMR Offices. Closure plan to be developed FY13.
16.000	\$0.06	11.03	3.91	No		Incomplete								0			0				Incomplete	
9.000	\$0.06	16.07	3.33	No		Incomplete								0			0				Incomplete	
8.000	\$0.06	10.03	3.75	No		Incomplete								0			0				Incomplete	
16.750	\$0.06	21.64	2.99	No		Incomplete								0			0				Incomplete	National Ignition Facility. Closure plan to be developed FY13.
32.500	\$0.06	23.43	3.08	No		Incomplete								0			0				Incomplete	Secure Communications Network. Closure plan to be developed FY13.
9.000	\$0.06	16.04	2.78	No		Incomplete								0			0				Incomplete	Secure Communications Network. Closure plan to be developed FY13.

Basic Information																				IT Fac			
PSO	Site #	Site	GOCO / FED	Data Center Name	Data Center Function	Assigned DCEP POC	Data Center POC	Target Date for Closure (CY) (If Scheduled)	Phase of Closure	Street Address	Street Address 2	City	State	Zip Code	Country	Gross Floor Area (Sq.Ft.)	Facility Cost (\$/Sq.Ft. /Yr)	Electricity Included in Cost? (Y/N)	Data Center Tier / Type	Electricity Metered (Y/N)	Total Data Center (Facility) Power Capacity (kW)	Average Data Center Electricity Usage (kWh)	Total Data Center IT Power Capacity (kW)
NNSA	112	LLNL	GOCO	T-2580 R-2010	General	William E Maciel (925-423-1900)	David L Lima (925-422-0919)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	879	\$17.35	Yes	2: Tier II	No	95.000	47.500	33.000
NNSA	112	LLNL	GOCO	T-2632 R-1010	General	Paul C Dickinson (925-422-9130)	Kent R Oelrich (925-423-3300)	Q4 / 2014	Stage 1: Inventory	7000 East Ave		Livermore	Ca	94550	USA	552	\$18.33	Yes	2: Tier II	No	50.000	25.000	17.000
NNSA	112	LLNL	GOCO	T-3649 R-1000	General	Mark P Costella	Frank M Bailey	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	918	\$10.42	Yes	2: Tier II	No	125.000	62.500	42.000
NNSA	112	LLNL	GOCO	T-4377 R-104	General	Mark P Costella	David L Lima (925-422-0919)	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	595	\$14.18	Yes	2: Tier II	No	60.000	30.000	18.000
NNSA	112	LLNL	GOCO	T-4406 R-120	General	Mark P Costella	David L Lima (925-422-0919)	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	1,218	\$9.07	Yes	2: Tier II	No	225.000	112.500	65.000
NNSA	112	LLNL	GOCO	T-4725 R-1116	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	4,268	\$16.22	Yes	2: Tier II	No	800.000	400.000	230.000
NNSA	112	LLNL	GOCO	T-4725 R-1124	General	n/a	n/a	Q4 / 2012	Closed	7000 East Ave		Livermore	Ca	94550	USA	794	\$16.22	Yes	2: Tier II	No	225.000	112.500	65.000

ilities, Energy					Physical Servers										Virtualization				Network Storage			Notes
Average IT Electricity Usage (kWh)	Cost Per kWh (if known)	Watts per Sq.ft.	Estimated Power Usage Effectiveness (PUE)	Has A DC Pro Assessment been Conducted?	Current Rack Count (#)	Sq. Ft. per Rack	Super Computers or HPC Systems	Mainframes (IBM or compatible)	Mainframes (Other)	Windows Servers	Unix Servers	Linux Servers	Other	Total Physical Server Count (#)	Total Virtual Host Count (#)	Total Virtual OS Count (#)	Total Operating Systems Count (#)	Average CPU Utilization of All Physical Servers	SAN/NAS/ DAS - Total (TB)	SAN/NAS/ DAS - Used (TB)	Percent Used	Additional Information
16.500	\$0.06	18.77	2.88	No		Incomplete								0			0				Incomplete	Secure Communications Network. Closure plan to be developed FY13.
8.500	\$0.06	15.40	2.94	No		Incomplete								0			0				Incomplete	Security. Closure plan to be developed FY13.
21.000	\$0.06	22.88	2.98	No		Incomplete								0			0				Incomplete	
9.000	\$0.06	15.13	3.33	No		Incomplete								0			0				Incomplete	
32.500	\$0.06	26.68	3.46	No		Incomplete								0			0				Incomplete	
115.000	\$0.06	26.94	3.48	No		Incomplete								0			0				Incomplete	
32.500	\$0.06	40.93	3.46	No		Incomplete								0			0				Incomplete	
Incomplete					Incomplete									0								68%

Fugitive Emissions: Refrigerants and Fluorinated Gases, Mixed Refrigerants

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 refrigerant data using the default or simplified material balance approach, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the “Additional Information” column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Refrigerant Information																						Notes				
PSO	Site #	Site	FY	Data Entry Type	Refrigerant Type	Composition	Default Approach	OR	Simplified Material Balance Approach						Emitted Refrigerant Quantity (lbs)	F-Gas: Type 1		F-Gas: Type 2		F-Gas: Type 3		F-Gas: Type 4		Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
							Quantity Purchased/ Issued (lbs)	Quantity Returned to Supply (lbs)	Quantity in storage at beginning of inventory year (lbs)	Quantity in storage at end of inventory year (lbs)	Sum of all refrigerant acquisitions (lbs)	Sum of all refrigerant disbursements (lbs)	Total capacity of refrigerant in equipment at beginning of inventory year (lbs)	Total capacity of refrigerant in equipment at end of inventory year (lbs)		Material	Amount (lbs)	Material	Amount (lbs)	Material	Amount (lbs)	Material	Amount (lbs)			
SPO Request: Due to the collection methodology and roll up of FY 2008 data, details are not available for FY 2008 refrigerants. Please provide FY 2008 data, if available, and update corresponding fugitives data to ensure emissions are not double counted.																										
NNSA	112 LLNL		2008			#N/A									-	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	-	
NNSA	112 LLNL		2011		R-14	R-14	4.500	-							4.500	PFC-14	4.500	-	-	-	-	-	-	-	13.268	
NNSA	112 LLNL		2011		R-23	R-23	11.000	-							11.000	HFC-23	11.000	-	-	-	-	-	-	-	58.377	
NNSA	112 LLNL		2011		R-407C	R-32/125/134a	50.000	-							50.000	HFC-32	11.500	HFC-125	12.500	HFC-134a	26.000	-	-	-	34.598	
NNSA	112 LLNL		2011		R-410A	R-32/125	500.000	-							500.000	HFC-32	250.000	HFC-125	250.000	-	-	-	-	-	391.223	
NNSA	112 LLNL		2011		R-C318	R-C318	30.000	-							30.000	PFC-c318	30.000	-	-	-	-	-	-	-	118.388	
NNSA	112 LLNL		2012		R-23	R-23	11.000								11.000	HFC-23	11.000	-	-	-	-	-	-	-	58.377	
NNSA	112 LLNL		2012		R-134a	R-134a	45.000								45.000	HFC-134a	45.000	-	-	-	-	-	-	-	26.535	
NNSA	112 LLNL		2012		R-407C	R-32/125/134a	275.000								275.000	HFC-32	63.250	HFC-125	68.750	HFC-134a	143.000	-	-	-	190.288	
NNSA	112 LLNL		2012		R-C318	R-C318	70.000								70.000	PFC-c318	70.000	-	-	-	-	-	-	-	276.238	
NNSA	112 LLNL		2012		R-508B	R-23/116	10.000								10.000	HFC-23	4.600	PFC-116	5.400	-	-	-	-	-	46.947	

Fugitive Emissions: Fugitive Fluorinated Gases and Other Fugitive Emissions (Not to Include Process Emissions)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 fugitive data using the default or simplified material balance approach, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. Do not report process emissions in this tab. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the “Additional Information” column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Fugitive Gas Information																		Notes	
PSO	Site #	Site	FY	Data Entry Type	Material Type	Composition	Default Approach	OR	Simplified Material Balance Approach						Quantity Emitted (lbs)	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes	
							Quantity Purchased/ Issued (lbs)	Quantity Returned to Supply (lbs)	Quantity in storage at beginning of inventory year (lbs)	Quantity in storage at end of inventory year (lbs)	Sum of all F- Gas acquisitions (lbs)	Sum of all F- Gas disbursements (lbs)	Total capacity of F- Gas in equipment at beginning of inventory year (lbs)	Total capacity of all F-Gas in equipment at end of inventory year (lbs)					
NNSA	112	LLNL	2011		Carbon dioxide	CO2	11,542.000	-							11,542.000	5.235			
NNSA	112	LLNL	2011		HFC-245ca	C3H3F5	0.060	-							0.060	0.015			
NNSA	112	LLNL	2011		HFC-43-10mee	CF3CFHCFHCF2C	212.300	-							212.300	125.187			
NNSA	112	LLNL	2011		Methane	CH4	20.290	-							20.290	0.193			
NNSA	112	LLNL	2011		Nitrous oxide	N2O	0.500	-							0.500	0.070			
NNSA	112	LLNL	2011		PFC-9-1-18	C10F18	0.050	-							0.050	0.170			
NNSA	112	LLNL	2011		Sulfur hexafluoride	SF6	1,437.000	-							1,437.000	15,578.300			
NNSA	112	LLNL	2008		Methane	CH4	4.200								4.200	0.040			
NNSA	112	LLNL	2008		Carbon dioxide	CO2	20,868.500								20,868.500	9.466			
NNSA	112	LLNL	2008		HFC-134a	CH2FCF3	1,914.000								1,914.000	1,128.628			
NNSA	112	LLNL	2008		HFC-43-10mee	CF3CFHCFHCF2C	196.500								196.500	115.870			
NNSA	112	LLNL	2008		Nitrous oxide	N2O	18.900								18.900	2.658			
NNSA	112	LLNL	2008		PFC-c318	C-C4F8	24.000								24.000	94.710			
NNSA	112	LLNL	2008		Sulfur hexafluoride	SF6	3,065.000								3,065.000	33,227.202			
NNSA	112	LLNL	2010		Methane	CH4	1.460								1.460	0.014			
NNSA	112	LLNL	2010		Carbon dioxide	CO2	28,368.020								28,368.020	12.868			
NNSA	112	LLNL	2010		HFC-43-10mee	CF3CFHCFHCF2C	199.220								199.220	117.474			
NNSA	112	LLNL	2010		PFC-c318	C-C4F8	42.000								42.000	165.743			
NNSA	112	LLNL	2010		Sulfur hexafluoride	SF6	473.550								473.550	5,133.684		SPO Request: Please review and confirm value.	
NNSA	112	LLNL	2012		Sulfur hexafluoride	SF6	199.000								199.000	2,157.329			
NNSA	112	LLNL	2012		Methane	CH4	3.120								3.120	0.030			
NNSA	112	LLNL	2012		Carbon dioxide	CO2	17,480.900								17,480.900	7.929			
NNSA	112	LLNL	2012		HFC-43-10mee	CF3CFHCFHCF2C	39.560								39.560	23.327			
NNSA	112	LLNL	2012		HFC-245ca	C3H3F5	2.200								2.200	0.559			

311.7 Tonnes of CO2 generated as a result of controlled burns at S300.

Industrial Process Emissions By Process (Not Reported under Tab 6.2 Fugitive F-gases)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 industrial process emission data by process, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. Report emissions at the individual process level; a laboratory is not considered a single process. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the “Additional Information” column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Industrial Process Information									Notes	
PSO	Site #	Site	FY	Process Type	GHG Type	Composition	Quantity Emitted (lbs)	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
NNSA	112	LLNL				#N/A		-		
						#N/A		-		
						#N/A		-		
						#N/A		-		
						#N/A		-		

Fugitive Emissions: On-site Wastewater Treatment (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 on-site wastewater treatment plant/system data by type, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the "Additional Information" column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

On-Site Wastewater Treatment Information														Notes	
PSO	Site #	Site	FY	Workdays per Year	Centralized WWTP with Anaerobic Digestion (Persons)	Centralized WWTP with Nitrification / Denitrification (Persons)	Centralized WWTP without Nitrification / Denitrification (Persons)	Effluent Discharge to Rivers and Estuaries with Nitrification / Denitrification (Persons)	Effluent Discharge to Rivers and Estuaries without Nitrification / Denitrification (Persons)	Wastewater Treatment Lagoons (Persons)	Septic Systems (Persons)	Biogenic MtCO ₂ e	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
NNSA	112	LLNL	2011	230.000						78.000	76.000	-	10.448	LLNL assumptions for lagoon: 1) 69 FTE on 4/10s + 4 firemen 24/7, 2) Firefighter days per year total of 1460, 3) FTE equivalents an a 4-10 round up to 9 is 8.202, 4) Total = 78. For septic: 1) 44 FTE on 4/10s + 5 FTE 24/7 four days per week + 3 FTE 24/7 three days per week + 5 officers and 10 trainees 5 days per week at the firing range, 2) Security equivalent of 17.4, 3) FTE equivalents a 4-10 round up to 18, 4) Total = 76.4	
NNSA	112	LLNL	2008	230.000								-	7.200		SPO Request: Do not have raw data. Please provide original data, if available
NNSA	112	LLNL	2010	230.000								-	7.200		SPO Request: Do not have raw data. Please provide original data, if available
NNSA	112	LLNL	2012	184.000						72.000		-	4.207	LLNL assumptions for lagoon: 72 FTE on 4/10s	
NNSA	112	LLNL	2012	365.000						12.000		-	1.391	LLNL assumptions for lagoon: 4 firemen 24/7	
NNSA	112	LLNL	2012	184.000							38.000	-	1.982	LLNL assumptions for septic: 38 FTE on 4/10s	
NNSA	112	LLNL	2012	197.000							15.000	-	0.838	LLNL assumptions for septic: 5 FTE 24/7 four days per week (8 hour shifts) Security	
NNSA	112	LLNL	2012	168.000							9.000	-	0.429	LLNL assumptions for septic 3 FTE 24/7 three days per week (8 hour shifts) Security	

Contracted Wastewater Treatment (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 contracted wastewater treatment plant/system data, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. If actual percentages are available from wastewater treatment plant/system contractor, site may override the current calculated percentages in columns I, K, M, and O. Finally, if historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the "Additional Information" column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

For the years represented below, the Off-site Wastewater Treatment plant managed by the City of Livermore is centralized with Anaerobic Digestion with Nitrification/Denitrification of 100% of the waste water received. 80% of the water is discharged to the Bay through a common pipeline with several other facilities. 20% of the waste water is diverted for utilization in non-potable applications.

Contracted Wastewater Information																		Notes	
PSO	Site #	Site	FY	Workdays per Year	Centralized WWTP with Anaerobic Digestion (Persons)	Centralized WWTP with Nitrification / Denitrification		Centralized WWTP without Nitrification / Denitrification		Effluent Discharge to Rivers and Estuaries with Nitrification / Denitrification		Effluent Discharge to Rivers and Estuaries without Nitrification / Denitrification		Wastewater Treatment Lagoons		Biogenic MtCO ₂ e	Total Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
						%	Persons	%	Persons	%	Persons	%	Persons	%	Persons				
NNSA																		SPO Request: Please check accuracy/ consistency following change in reporting method vs 2008 and 2010.	
	112	LLNL	2011	230.000	6,088.0	100.0%	6,088.0	0.0%	-	80.0%	4,870.4	0.0%	-	0.0%	-	19.264	13.056		
NNSA																		SPO Request: Please provide actual data, if available. Do not have raw data.	
	112	LLNL	2010	230.000		36.5%	-	63.5%	-	36.5%	-	63.5%	-	0.0%	-	30.059	49.802		
NNSA																		SPO Request: Please provide actual data, if available. Do not have raw data.	
	112	LLNL	2008	230.000		36.5%	-	63.5%	-	36.5%	-	63.5%	-	0.0%	-	27.052	52.632		
NNSA	112	LLNL	2012	230.000	6,113.0	100.0%	6,113.000	0.0%	-	80.0%	4,890.4	0.0%	-	0.0%	-	19.343	13.110		
						-		100.0%	-	0.0%	-	100.0%	-	0.0%	-	-	-		
						-		100.0%	-	0.0%	-	100.0%	-	0.0%	-	-	-		
						-		100.0%	-	0.0%	-	100.0%	-	0.0%	-	-	-		
						-		100.0%	-	0.0%	-	100.0%	-	0.0%	-	-	-		
						-		100.0%	-	0.0%	-	100.0%	-	0.0%	-	-	-		

Business Air Travel

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 air travel data by flight type for the primary contractor, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. Federal business air travel information will be pulled by DOE headquarters from GovTrip. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the "Additional Information" column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Air Travel Information										Notes	
PSO	Site #	Site	FY	Process Type	Flight Type	Fuel Type	Consumption/Usage	Unit of Measure	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
NNSA	112	LLNL	2008	Air Business Travel	Unknown	Jet Fuel	35,453,275	Passenger miles	6,776.432		SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate miles as unknown to match original 08 MtCO ₂ e estimate of: 9,709.
	112	LLNL	2010	Air Business Travel	Unknown	Jet Fuel	36,152,583	Passenger miles	6,910.096		SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate miles as unknown to match original 08 MtCO ₂ e estimate of: 9,900.508
NNSA	112	LLNL	2011	Air Business Travel	Short Haul (< 300 miles)	Jet Fuel	12,877	Passenger miles	3.769		
NNSA	112	LLNL	2011	Air Business Travel	Medium Haul (300 mile ≤ x < 700 mile)	Jet Fuel	500,757	Passenger miles	83.651		
NNSA	112	LLNL	2011	Air Business Travel	Long Haul (≥ 700 miles)	Jet Fuel	50,138,400	Passenger miles	9,583.303		
NNSA	112	LLNL	2012	Air Business Travel	Short Haul (< 300 miles)	Jet Fuel	9,753	Passenger miles	2.855		
NNSA	112	LLNL	2012	Air Business Travel	Medium Haul (300 mile ≤ x < 700 mile)	Jet Fuel	371,246	Passenger miles	62.016		
NNSA	112	LLNL	2012	Air Business Travel	Long Haul (≥ 700 miles)	Jet Fuel	37,923,550	Passenger miles	7,248.593		
				Air Business Travel		#N/A		#N/A	#N/A		
				Air Business Travel		#N/A		#N/A	#N/A		

Business Ground Travel (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 ground travel data for the primary contractor, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. Federal business ground travel information will be pulled by DOE headquarters from GovTrip. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the "Additional Information" column.

Source: Site/Lab

Key:	
Light	Pre-populated data by SPO to be reviewed
Green	and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Ground Travel Information												Notes	
PSO	Site #	Site	FY	Process Type	Vehicle Type	Fuel Type	Consumption/ Usage	Unit of Measure	Site Average Miles per Trip	Default Average Miles per Trip	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes

NNSA	112	LLNL	2008	Rental Trip Mileage	Passenger Car	Gasoline	7,759	Number of Agency Busir	419.000	210.000	1,217.700		SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate # of passenger car trips at 419 miles per trip to match original 08 MtCO ₂ e estimate of: 1,217.7
NNSA	112	LLNL	2010	Rental Trip Mileage	Passenger Car	Gasoline	7,696	Number of Agency Busir	419.000	210.000	1,207.900		SPO Request: Do not have raw data. Please provide original data, if available. Used goal seek to estimate # of passenger car trips at 419 miles per trip to match original 08 MtCO ₂ e estimate of: 1,207.9
NNSA	112	LLNL	2011	Rental Trip Mileage	Passenger Car	Gasoline	15,305	Number of Agency Busir	152.700	210.000	875.400		
NNSA	112	LLNL	2011	POV Mileage	Passenger Car	Gasoline	995,445	Total Reimbursed Mileage		-	372.865		
NNSA	112	LLNL	2011	Mass Transit Trip Mileage	Intercity Rail	Diesel	5	Number of Agency Busir	575.400	575.400	0.533		
NNSA	112	LLNL	2012	Rental Trip Mileage	Passenger Car	Gasoline	11,503	Number of Agency Busir	240.852	210.000	1,037.758		
NNSA	113	LLNL	2012	POV Mileage	Passenger Car	Gasoline	995,395	Total Reimbursed Mileage		-	372.846		
										#N/A	#N/A		
										#N/A	#N/A		
										#N/A	#N/A		

Employee Commuting (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: Provide FY 2012 commuting data for both Federal and primary contractor employees, a short description of the methodology used for gathering information both in the CEDR and SSP narrative, and address SPO requests. If historical data is updated please be sure to address this in your SSP narrative, highlight the cell, and note the change in the "Additional Information" column.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to be reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

Ground Travel Information												Notes	
PSO	Site #	Site	FY	Process Type	Vehicle Type	Fuel Type	Consumption/ Usage	Unit of Measure	Site Number of Commute Days per Year	Default Number of Commute Days per Year	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
NNSA	112	LLNL	2008	Personal Owned Vehicles	POV Passenger Car	Gasoline	299,661		230.000	230.000	25,816.200		
NNSA	112	LLNL	2010	Personal Owned Vehicles	POV Passenger Car	Gasoline	276,199		230.000	230.000	23,794.954		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	170,322		230.000	230.000	14,673.467		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	17,508		178.000	230.000	1,167.322		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	77,921		204.000	230.000	5,954.137		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	8,292		126.000	230.000	391.349		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	4,518		230.000	230.000	389.240		
NNSA	112	LLNL	2011	Personal Owned Vehicles	POV Passenger Car	Gasoline	1,671		204.000	230.000	127.693		
												The data for commuting included applying the results of a commuter survey and information from Human Resources.	
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Gasoline	95,496		230.000	230.000	8,227.107		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Hybrid	4,724		230.000	230.000	206.441		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV SUV or Truck	Gasoline	26,837		230.000	230.000	3,298.133		
NNSA	112	LLNL	2012	Personal Owned Vehicles	Motorcycle	Gasoline	2,851		230.000	230.000	111.894		
NNSA	112	LLNL	2012	Mass Transit	Bus	Diesel	2,546		230.000	230.000	62.755		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Gasoline	9,815		184.000	230.000	676.460		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Hybrid	485		184.000	230.000	16.956		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV SUV or Truck	Gasoline	2,758		184.000	230.000	271.155		
NNSA	112	LLNL	2012	Personal Owned Vehicles	Motorcycle	Gasoline	293		184.000	230.000	9.200		
NNSA	112	LLNL	2012	Mass Transit	Bus	Diesel	262		184.000	230.000	5.166		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Gasoline	43,679		207.000	230.000	3,386.704		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Hybrid	2,161		207.000	230.000	84.993		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV SUV or Truck	Gasoline	12,275		207.000	230.000	1,357.682		
NNSA	112	LLNL	2012	Personal Owned Vehicles	Motorcycle	Gasoline	1,304		207.000	230.000	46.061		
NNSA	112	LLNL	2012	Mass Transit	Bus	Diesel	1,165		207.000	230.000	25.844		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Gasoline	4,652		161.000	230.000	280.543		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV Passenger Car	Hybrid	230		161.000	230.000	7.036		
NNSA	112	LLNL	2012	Personal Owned Vehicles	POV SUV or Truck	Gasoline	1,307		161.000	230.000	112.437		
NNSA	112	LLNL	2012	Personal Owned Vehicles	Motorcycle	Gasoline	139		161.000	230.000	3.819		
NNSA	112	LLNL	2012	Mass Transit	Bus	Diesel	124		161.000	230.000	2.139		

Fugitive Emissions: On-site Landfills and Municipal Solid Waste Facilities (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: This is an optional tab for FY 2012 GHG estimates of on-site landfill/municipal solid waste emissions and GHG goal performance. Enter information uploaded or to be uploaded into PPTRS for FY 2012 and select "Current FY" from the drop-down list in cell V4. If the information is not readily available, then select "Last FY" and the historical data provided will be used as a placeholder for performance estimates. Also, please address SPO requests on historical data. If historical data is updated please be sure to highlight the cell and note the change in the "Additional Information" column. Finally, sites may elect to provide a short description of the methodology used for gathering this information.

Source: Site/Lab

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Methodology

On-Site Landfill Information																		Notes						
PSO	Site #	Site	FY	Mass of Solid Waste Disposed On-site (Short Tons)	Landfill Open Date (Year)	Landfill Close Date (Year)	Carbon dioxide (biogenic) (MT Megagram)	Methane (MT Megagram)	Percentage Uncontrolled Release (CO2 Biogenic)		Percentage Uncontrolled Release (CH4)		Landfill Gas Collection System Efficiency (CH4)		Venting Loss (CH4)		Methotropic Bacteria Oxidation Factor (CH4)		Combustion Oxidation Factor (CO2 Biogenic)		Biogenic MtCO2e	Anthropogenic MtCO2e	Additional Information	SPO Notes
									Site	Default	Site	Default	Site	Default	Site	Default	Site	Default	Site	Default				
NNSA	112	LLNL								100%		50%		75%		1%		10%		99%	-	-		
										100%		50%		75%		1%		10%		99%	-	-		
										100%		50%		75%		1%		10%		99%	-	-		
										100%		50%		75%		1%		10%		99%	-	-		
										100%		50%		75%		1%		10%		99%	-	-		

Fugitive Emissions: Contracted/Off-site Landfills and Municipal Solid Waste Facilities (Domestic Only)

Requirement(s): DOE O 436.1, E.O. 13514

Instructions: This is an optional tab for FY 2012 GHG estimates of off-site landfill/municipal solid waste emissions and GHG goal performance. Enter information uploaded or to be uploaded into PPTRS for FY 2012 and select "Current FY" from the drop-down list in cell AD4. If the information is not readily available, then select "Last FY" and the historical data provided will be used a placeholder for performance estimates. Also, please address SPO requests on historical data. If historical data is updated please be sure to highlight the cell and note the change in the "Additional Information" column. Finally, sites may elect to provide a short description of the methodology used for gathering this information.

Source: Site/Lab

Current FY

Key:	
Light Green	Pre-populated data by SPO and updated with changes
Orange	Fields that need to review changes highlighted in blue
Yellow	Optional data field to be applicable and available
Red	Calculated fields. No action

Methodology																																
Contracted/Off-Site Landfill Information																								Notes								
PSO	Site #	Site	FY	Mass of Solid Waste Disposed Off-site (Short Tons)	Mass of Solid Waste Disposed Off-site (Megagram)	Degradable Organic Carbon (Megagram C/ Megagram Waste)		DOC Anaerobic Digestibility (%)		Methane Correction Factor	Methane % of Landfill Gas (%)		Methane Molecular Weight Conversion	Carbon Dioxide Molecular Weight Conversion	Carbon dioxide (biogenic) (MT Megagram)	Methane (MT Megagram)	Percentage Uncontrolled Release (CO2 Biogenic)		Percentage Uncontrolled Release (CH4)		Landfill Gas Collection System Efficiency (CH4)		Venting Loss (CH4)		Methotrophic Bacteria Oxidation Factor (CH4)		Combustion Oxidation Factor (CO2 Biogenic)		Biogenic MtCO ₂ e	Anthropogenic MtCO ₂ e	Additional Information	SPO Notes
						Site	Default	Site	Default		Site	Default					Site	Default	Site	Default	Site	Default	Site	Default	Site	Default	Site	Default				
NNSA	112	LLNL	2011	919.300	833.971		0.203		50.0%	1.0		50.0%	1.333	3.667	155.188	56.432		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	212.225	671.288		SPO Request: Please provide actual data, if available. Do not have raw data.
NNSA	112	LLNL	2010		-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	31.214	729.768		
NNSA	112	LLNL	2008		-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	230.714	729.768		SPO Request: Please provide actual data, if available. Do not have raw data.
NNSA	112	LLNL	2012	754.800	684.739		0.203		50.0%	1.0		50.0%	1.333	3.667	127.419	46.334		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	174.249	551.168		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		
					-		0.203		50.0%	1.0		50.0%	1.333	3.667	-	-		100.0%		50.0%		75.0%		1.0%		10.0%		99.0%	-	-		

Fleet Fuel (FAST Data)

Requirement(s): NECPA, EISA 2007, DOE O 436.1, E.O. 13514

Instructions: This is an optional tab for FY 2012 GHG estimates of fleet fuel and fleet fuel goal performance. Enter information uploaded or to be uploaded into FAST for FY 2012 and select "Current FY" from the drop-down list in cell N4. If the information is not readily available, then select "Last FY" and the historical FAST data provided will be used a placeholder for performance estimates.

Source: FAST

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

PSO	Site Num	Fleet Parent	Fleet Name	Report Year	Agency Group	EPAct-covered Agency	EO-covered Fuel	Fuel Group	Fuel Name	Fuel Type	Fuel State Abbrevia tion	Vehicle Exemption	Fuel Armored	Fuel Consumption (GGE)	Fuel Consumption (NU)	Fuel Natural Units	Fuel GGE Conversion Factor	Fuel Cost (\$)	Diesel From B20	Anthropogenic MtCO ₂ e
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2000	EPACT-Cc	Yes	No	Alternative	CNG	CNG	NS	None	No	762	918	hundred cul	0.83	4,165.000	No	5.055108
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2000	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	E/ER	No	2704	2704	gallons	1	2,379.000	No	23.96117249
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2000	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	LE	No	27703	27703	gallons	1	35,459.000	No	245.4868201
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2000	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	53079	46276	gallons	1.147	40,959.000	No	491.0681082
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2000	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	367732	367732	gallons	1	452,459.000	No	3258.613123
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	No	Alternative	CNG	CNG	NS	None	No	274	330	hundred cul	0.83	4,831.000	No	1.817716
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	NS	E/ER	No	13051	11378	gallons	1.147	12,060.000	No	120.7432295
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	E/ER	No	315	315	gallons	1	387.000	No	2.791334813
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	LE	No	34632	34632	gallons	1	53,623.000	No	306.8873246
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	33013	28782	gallons	1.147	39,011.000	No	305.4245833
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2001	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	394995	394995	gallons	1	539,361.000	No	3500.200935
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	No	Alternative	CNG	CNG 3000	NS	None	No	1177	5229	gallons at 30	0.225	3,641.000	No	7.808218
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	NS	E/ER	No	14274	12445	gallons	1.147	10,453.000	No	132.0579924
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	E/ER	No	659	659	gallons	1	744.000	No	5.839649657
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	NS	LE	No	38443	38443	gallons	1	48,548.000	No	340.6580452
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	NS	None	No	21497	18742	gallons	1.147	20,222.000	No	198.8826301
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2002	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	NS	None	No	383734	383734	gallons	1	486,449.000	No	3400.412931
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2003	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	14523	12662	gallons	1.147	19,564.000	No	134.3616522
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2003	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	1310	1310	gallons	1	2,030.000	No	11.60840827
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2003	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	42239	42239	gallons	1	65,904.000	No	374.295845
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2003	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	23058	20103	gallons	1.147	31,160.000	No	213.3244492
NNSA	112	Oakland Site Of Lawrence Livermore National Laboratory		2003	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	374970	374970	gallons	1	581,204.000	No	3322.751794
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2004	EPACT-Cc	Yes	No	Alternative	CNG	CNG	CA	None	No	2988	3600	hundred cul	0.83	3,970.000	No	19.822392
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2004	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	6386	5568	gallons	1.147	6,960.000	No	59.08101018
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2004	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	43019	43019	gallons	1	64,098.000	No	381.2077217
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2004	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	30765	26822	gallons	1.147	33,528.000	No	284.6268835
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2004	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	353987	353987	gallons	1	527,441.000	No	3136.813449
NNSA	112	NNSA Service C: Livermore Site Office		2004	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	1272	1272	gallons	1	3,078.000	No	11.27167582
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Alternative	Bio-diesel	B20	CA	None	No	796	707	gallons	1.126	2,436.000	No	5.892586335
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Alternative	CNG	CNG	CA	None	No	2093	2522	hundred cul	0.83	3,214.000	No	13.884962
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Petroleum	Diesel	B20	CA	None	No	3186	2829	gallons	1.126	9,742.000	Exempt	23.58515083
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	5081	4430	gallons	1.147	8,860.000	No	47.00761239
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	207	207	gallons	1	414.000	No	1.834305735
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	37255	37255	gallons	1	74,510.000	No	330.1307253
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	Yes	Petroleum	Diesel	B20	CA	None	No	0	0	gallons	1.126	0.000	Covered	0
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	27700	24150	gallons	1.147	48,300.000	No	256.2705891
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2005	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	326594	326594	gallons	1	653,188.000	No	2894.073657
NNSA	112	NNSA Service C: Livermore Site Office		2005	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	271	377	gallons	0.72	999.000	No	0.361862114
NNSA	112	NNSA Service C: Livermore Site Office		2005	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	972	972	gallons	1	2,575.000	No	8.61326171
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	No	Alternative	CNG	CNG	CA	None	No	935	1127	hundred cul	0.83	1,824.000	No	6.20279
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	5139	4480	gallons	1.147	10,796.000	No	47.54420784
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	87	87	gallons	1	210.000	No	0.770940091
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	34096	34096	gallons	1	86,603.000	No	302.1376248
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	29991	26148	gallons	1.147	63,017.000	No	277.4661096
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2006	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	267553	267553	gallons	1	679,584.000	No	2370.888899
NNSA	112	NNSA Service C: Livermore Site Office		2006	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	1184	1645	gallons	0.72	3,054.000	No	1.580976912
NNSA	112	NNSA Service C: Livermore Site Office		2006	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	2779	2779	gallons	1	5,917.000	No	24.62577602
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2007	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	17835	24771	gallons	0.72	59,946.000	No	23.81480002
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2007	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	5993	5225	gallons	1.147	13,271.000	No	55.44511337
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2007	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	LE	No	266	232	gallons	1.147	589.000	No	2.460937787
NNSA	112	NNSA Service C: Lawrence Livermore National Laboratory		2007	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	985	985	gallons	1	2,580.000	No	8.728459655

PSO	Site Num	Fleet Parent	Fleet Name	Report Year	Agency Group	EPAct-covered Agency	EO-covered Fuel	Fuel Group	Fuel Name	Fuel Type	Fuel State Abbreviation	Vehicle Exemption	Fuel Armored	Fuel Consumption (GGE)	Fuel Consumption (NU)	Fuel Natural Units	Fuel GGE Conversion Factor	Fuel Cost (\$)	Diesel From B20	Anthropogenic MtCO ₂ e
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2007	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	27329	27329	gallons	1	71,601.000	No	242.1726639
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2007	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	31717	27652	gallons	1.147	70,235.000	No	293.4344503
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2007	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	238620	238620	gallons	1	625,184.000	No	2114.502582
NNSA	112	NNSA Service C	Livermore Site Office	2007	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	1099	1527	gallons	0.72	3,665.000	No	1.467477725
NNSA	112	NNSA Service C	Livermore Site Office	2007	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	2800	2800	gallons	1	7,100.000	No	24.81186501
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	36873	51213	gallons	0.72	161,321.000	No	49.23594736
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	6116	5332	gallons	1.147	19,196.000	No	56.58306581
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	LE	No	13	11	gallons	1.147	40.000	No	0.120271396
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	213	213	gallons	1	767.000	No	1.887474017
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	27551	27551	gallons	1	99,183.000	No	244.1398903
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	31584	27536	gallons	1.147	99,130.000	No	292.2039814
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2008	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	158586	158586	gallons	1	570,910.000	No	1405.290866
NNSA	112	NNSA Service C	Livermore Site Office	2008	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	1099	1527	gallons	0.72	6,108.000	No	1.467477725
NNSA	112	NNSA Service C	Livermore Site Office	2008	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	2800	2800	gallons	1	8,400.000	No	24.81186501
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2009	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	44386	61647	gallons	0.72	138,705.000	No	59.26794021
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2009	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	39257	34226	gallons	1.147	67,084.000	No	363.1918598
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2009	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	Yes	454	396	gallons	1.147	776.000	No	4.2002472
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2009	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	122891	122891	gallons	1	301,082.000	No	1088.983894
NNSA	112	NNSA Service C	Livermore Site Office	2009	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	520	722	gallons	0.72	1,137.000	No	0.694347968
NNSA	112	NNSA Service C	Livermore Site Office	2009	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	202	202	gallons	1	600.000	No	1.789998833
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	LE	No	17791	24710	gallons	0.72	62,517.000	No	23.7560475
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	44470	61764	gallons	0.72	156,265.000	No	59.38010412
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	5614	4895	gallons	1.147	11,995.000	No	51.93873961
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	LE	No	253	221	gallons	1.147	542.000	No	2.340666391
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	LE	Yes	2736	2385	gallons	1.147	5,844.000	No	25.31250295
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	3994	3994	gallons	1	11,465.000	No	35.39235316
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	31696	27634	gallons	1.147	67,708.000	No	293.2401658
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2010	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	96611	96611	gallons	1	277,277.000	No	856.106818
NNSA	112	NNSA Service C	Livermore Site Office	2010	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	711	711	gallons	1	2,144.000	No	6.300441436
NNSA	112	NNSA Service C	Livermore Site Office	2010	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	LA	None	No	23	23	gallons	1	63.000	No	0.203811748
NNSA	112	NNSA Service C	Livermore Site Office	2010	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	NV	None	No	9	9	gallons	1	24.000	No	0.079752423
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	LE	No	15862	22031	gallons	0.72	70,940.000	No	21.1802836
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	40329	56013	gallons	0.72	180,362.000	No	53.85069078
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	E/ER	No	6025	5254	gallons	1.147	619.000	No	55.74116604
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Petroleum	Diesel	DSL	CA	LE	No	235	205	gallons	1.147	701.000	No	2.174136767
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	E/ER	No	101	101	gallons	1	25.000	No	0.894999416
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	No	Petroleum	Gasoline	GAS	CA	LE	No	8581	8581	gallons	1	31,149.000	No	76.03950487
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	29786	25969	gallons	1.147	69,262.000	No	275.5695223
NNSA	112	NNSA Service C	Lawrence Livermore National Laboratory	2011	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	94590	94590	gallons	1	342,766.000	No	838.1979683
NNSA	112	NNSA Service C	Livermore Site Office	2011	EPACT-Cc	Yes	No	Alternative	E-85	E85	CA	None	No	21	30	gallons	0.72	0.000	No	0.028040976
NNSA	112	NNSA Service C	Livermore Site Office	2011	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	497	497	gallons	1	1,794.000	No	4.404106039
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Alternative	E-85	E85	CA	LE	No	20790	14969	gallons	0.72	72,351.000	No	27.76056588
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Alternative	E-85	E85	CA	None	No	60252	43381	gallons	0.72	209,678.000	No	80.45356495
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	E/ER	No	6342	7274	gallons	1.147	21,882.000	No	58.67393776
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	LE	No	2815	3229	gallons	1.147	9,715.000	No	26.04338297
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	E/ER	No	318	318	gallons	1	1,227.000	No	2.817918954
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	LE	No	8085	8085	gallons	1	31,209.000	No	71.64426021
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Diesel	DSL	CA	None	No	23636	27110	gallons	1.147	81,545.000	No	218.6719005
NNSA	112	NNSA Service C	Livermore Site Office	2012	EPACT-Cc	Yes	Yes	Petroleum	Gasoline	GAS	CA	None	No	89938	89992	gallons	1	347,350.000	No	796.9748268

EISA Section 432 - Compliance Path

Requirement(s): EISA 2007, DOE O 436.1

Instructions: June 2012 marks the beginning of the second 4-year period of EISA Section 432. To begin strategizing and planning for this next 4-year period update the FIMS list below by identifying covered facilities, estimating energy consumption, providing anticipated evaluation year and type/level including re-/retro-commissioning and benchmarking status. Sites will be provided the option to update or use information provided in December for their EISA Section 432 June snapshot reporting.

Key:	
Light Green	Pre-populated data by SPO to be reviewed and updated with changes highlighted in blue.
Orange	Fields that need to reviewed and updated with changes highlighted in blue.
Yellow	Optional data field to be completed, if applicable and available.
Red	Calculated fields. No action required.

Source: Site/Lab and FIMS

Strategy		
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FIMS' Facility Information																Covered Facility Information							Notes	
Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Owners hip	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissi oning Assessment	Benchmark ing Status	Benchmarking System	Additional Information
Lawrence Liver 14002	001	001	205181	8	LLNS OFF-SITE OFFICE		B	3,156	3,156	-		112 NNSA	C	N		Not Covered								
Lawrence Liver 14002	001	001	89542	41	LONG TERM STORAGE		B	25,555	25,555	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89544	71	WESTGATE BADGE OFFICE		B	4,166	4,166	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89546	110	STORAGE		B	153	153	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89547	111	DIRECTORS OFFICE		B	112,418	112,418	-		112 NNSA	O	N		Covered	20,680	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	203771	112	COMPUTER CENTER		B	45,512	45,512	-		112 NNSA	O	N		Covered	31,540	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89548	113	G.S		B	44,426	44,426	-		112 NNSA	O	N		Covered	3,544	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89549	115	COMPUTATION FACILITY BLDG		B	17,140	17,140	-		112 NNSA	O	N		Covered	4,311	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89550	116	G.S		B	7,781	7,781	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89551	117	COMPUTATION FACILITY BLDG		B	11,370	11,370	-		112 NNSA	O	N		Covered	7,020	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89552	118	TELECONFERENCE FACILITY		B	1,505	1,505	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89553	121	PAT OFFICE		B	90,759	90,759	-		112 NNSA	O	N		Covered	7,850	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89554	122	PROTOCOL OFFICE		B	962	962	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89555	123	AUDITORIUM		B	7,742	7,742	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89556	125	WEST CAFETERIA		B	12,513	12,513	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89561	131	ENGINEERING		B	285,308	285,308	-		112 NNSA	O	N		Covered	55,220	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89563	133	CENTRAL PLANT/DPRF/N TTC		B	5,631	5,631	-		112 NNSA	O	N		Covered	67,960	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	125727	134	G.S/STORAGE		B	1,284	1,284	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	125728	135	G.S/STORAGE		B	1,369	1,369	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	143668	140	G.S		B	66,660	66,660	-		112 NNSA	O	N		Covered	7,465	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	89576	141	ELECTRONIC SHOPS		B	47,342	47,342	-		112 NNSA	O	N		Covered	4,308	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001	001	143756	142	PAT		B	20,306	20,306	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002	001	001	89589	151	ISOTOPE SCIENCES FACILITY		B	96,018	96,018	-		112 NNSA	O	N		Covered	47,200	2016	2016 Walk-Through	No	Completed	Portfolio Manager		

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Owners hip	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Lawrence Livermore	14002	001	89590	152	GENERATOR HOUSE		B	751	751	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89593	153	MICROFABRICATION LAB		B	25,976	25,976	-		112	NNSA	O	N	Covered	18,440	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89594	154	BIO SECURITY & NANOSCIENCE		B	9,450	9,450	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	141490	155	ISF OFFICE		B	21,742	21,742	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89599	161	JUPITER LASER SUPPORT		B	6,105	6,105	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89600	162	RESEARCH/CRYSTAL GTH		B	19,042	19,042	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89605	164	MACHINE SHOP		B	207	207	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89606	165	OPTICS/DEVELOPMENT LAB		B	10,053	10,053	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89607	166	DEVELOPMENT LAB		B	13,226	13,226	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	125923	170	NARAC FACILITY		B	43,760	43,760	-		112	NNSA	O	N	Covered	4,922	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89626	173	PAT WELD SHOP		B	413	413	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89634	174	PAT		B	19,332	19,332	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89635	175	IMF MANAGED LAB		B	16,656	16,656	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89636	176	PAT SHOP		B	3,973	3,973	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89638	179	PAT		B	2,720	2,720	-		112		O	N	Not Covered								
Lawrence Livermore	14002	001	89640	181	PAT		B	13,532	13,532	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89641	182	VACANT		B	1,958	1,958	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89657	190	CAMS FACILITY		B	10,252	10,252	-		112	NNSA	O	N	Covered	3,505	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89658	191	HEAF		B	121,028	121,028	-		112	NNSA	O	N	Covered	25,590	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89662	194	PAT		B	41,543	41,543	-		112	NNSA	O	N	Covered	6,178	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89664	195	EPD/ORAD SHOP		B	400	400	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89665	196	EPD/ORAD SRVC-MNTRNG STAT		B	853	853	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89666	197	IMF MANAGED LAB FACILITY		B	10,716	10,716	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89668	198	MACHINE SHOP		B	966	966	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	133205	211	PAT		B	14,122	14,122	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89671	212	VACANT		B	3,770	3,770	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89674	214	VACANT		B	4,837	4,837	-		112	NNSA	O	N	Not Covered								

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Owners hip	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Lawrence Livermore	14002	001	89676	216	CYBER SECURITY		B	18,976	18,976	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89677	217	VACANT		B	17,999	17,999	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89680	218	VACANT		B	17,956	17,956	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89682	219	IMF MANAGED OFFICE FACILITY		B	18,429	18,429	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89684	221	VACANT		B	1,764	1,764	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89699	231	DEVLMT & ASSBLY ENGNNG		B	142,403	142,403	-		112	NNSA	O	N	Covered	15,373	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89701	233	MATERIALS MANAGEMENT		B	4,933	4,933	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	125924	234	MATERIALS MGMT OFFICE		B	5,261	5,261	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89702	235	WMRDF		B	88,175	88,175	-		112	NNSA	O	N	Covered	3,674	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89703	239	RADIOGRAPHY		B	12,517	12,517	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89707	241	VACANT		B	54,369	54,369	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	201413	242	OFFICE		B	20,328	20,328	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89711	243	E&E LAB SPACE		B	20,000	20,000	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89714	251	VACANT		B	31,120	31,120	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89716	252	HC/SHIPNG/RECEIVING SHED		B	192	192	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89722	253	HC DEPT OFFICES & LABS		B	30,932	30,932	-		112	NNSA	O	N	Covered	3,583	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89724	254	HC BIO ASSAY LAB		B	2,488	2,488	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89725	255	HC SPD LABS-OFFICES		B	21,855	21,855	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89727	256	TELCOM NODE #1		B	5,937	5,937	-		112	NNSA	O	N	Covered	4,032	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89731	261	VACANT		B	52,655	52,655	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	140543	262	G.S		B	10,882	10,882	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90072	263	VACANT		B	51	51	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	202401	264	ESH OFFICES		B	20,461	20,461	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89744	271	PROTECTIVE FORCE		B	18,874	18,874	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89746	272	PAT		B	10,124	10,124	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89747	274	SECURITY ADMINISTRATIONS		B	21,436	21,436	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89752	280	VACANT		B	5,341	5,341	-		112	EM	O	N	Not Covered								
Lawrence Livermore	14002	001	89757	281	LABORATORY		B	18,505	18,505	-		112	NNSA	O	N	Not Covered								

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Owners hip	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Lawrence Livermore	14002	001	89758	282	PAT		B	2,160	2,160	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89761	292	CAMS LAB FACILITY		B	20,811	20,811	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89763	293	CAMS LAB FACILITY		B	800	800	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89764	294	CAMS LAB FACILITY		B	970	970	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89765	297	PAPER DISPOSAL		B	992	992	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89767	298	TARGET FABRICATION		B	47,986	47,986	-		112	NNSA	O	N	Covered	17,266		2016	2016 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Livermore	14002	001	89768	311	DOE OFFICES		B	40,951	40,951	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89769	312	IMF MANAGED FACILITY		B	11,482	11,482	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89770	313	REGIONAL DISPATCH CENTER		B	4,352	4,352	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89771	314	DIR.OFF/QA		B	13,238	13,238	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89772	315	ESH ENVIRONMENTAL PROTECTION		B	18,133	18,133	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89774	316	DIRECTORS OFFICE		B	14,090	14,090	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89775	317	NETWORKING GROUP FACILITY		B	1,426	1,426	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89777	318	POOL CHANGE ROOM		B	6,112	6,112	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89782	319	IMF MANAGED OFFICE FACILITY		B	18,048	18,048	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89788	322	PLATING SHOP		B	5,704	5,704	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89792	323	EMERGENCY SERVICES / FIRE		B	18,555	18,555	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89793	324	EMERGENCY SERVICES / ALARMS		B	11,290	11,290	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89794	326	VACANT		B	3,516	3,516	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89795	327	RADIOGRAPHY		B	19,100	19,100	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89800	329	LASER WELD SHOP		B	5,150	5,150	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89801	331	TRITIUM FACILITY		B	30,484	30,484	-		112	NNSA	O	N	Covered	3,864		2014	2014 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Livermore	14002	001	89802	332	PU FACILITY		B	104,787	104,787	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89803	334	HETB		B	10,668	10,668	-		112	NNSA	O	N	Not Covered								

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Lawrence Liver 14002		001	89804	335	SUPPORT FACILITY		B	11,988	11,988	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89805	336	SOUTH SECURITY PORTAL		B	792	792	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89806	337	NW SECURITY PORTAL		B	792	792	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89808	341	VACANT		B	44,184	44,184	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89812	343	IMF MANAGED OFFICE/LAB FACILITY		B	27,368	27,368	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89813	345	VACANT		B	9,467	9,467	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89821	361	BIOSCIENCES RESEARCH		B	68,889	68,889	-		112 SC	O	N		Covered	11,530		2014	2014 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Liver 14002		001	89822	362	BIOSCIENCES RESEARCH		B	3,766	3,766	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89824	363	VACANT		B	1,584	1,584	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89825	364	BIOSCIENCES RESEARCH		B	10,932	10,932	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89827	365	G.S/BIO LAB		B	8,825	8,825	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89828	366	BIOSCIENCES RESEARCH		B	2,631	2,631	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89829	367	VACANT		B	629	629	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	202152	368	G.S/BSL-3 LABORATORY		B	1,590	1,590	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89839	373	BIO WAREHOUSE		B	1,768	1,768	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89841	376	VACANT		B	1,575	1,575	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89845	378	LAB SPACE		B	3,840	3,840	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89846	379	LAB SPACE		B	1,500	1,500	-		112 SC	O	N		Not Covered								
Lawrence Liver 14002		001	89847	381	OFFICE/RESEAR CH		B	95,421	95,421	-		112 NNSA	O	N		Covered	37,030		2013	2013 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Liver 14002		001	89848	382	TECH SUPPORT		B	292	292	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89849	383	MACHINE SHOP		B	6,715	6,715	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89855	391	DEVELOPMENT LABS		B	197,841	197,841	-		112 NNSA	O	N		Covered	56,898		2015	2015 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Liver 14002		001	89856	392	OPTICS LABORATORY		B	8,413	8,413	-		112 NNSA	O	N		Covered	3,030		2015	2015 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Liver 14002		001	89861	404	MUSD / BATTERY SHOP / WAREHOUSE		B	6,460	6,460	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89862	405	INDUSTRIAL ELECTRONICS		B	8,636	8,636	-		112 NNSA	O	N		Not Covered								
Lawrence Liver 14002		001	89863	406	VACANT		B	345	345	-		112 EM	O	N		Not Covered								

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Lawrence Livermore	14002	001	89868	411	SHIPPING/RECEIVING		B	71,625	71,625	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89874	415	EMPLOYEE RESOURCES		B	19,297	19,297	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89878	418	MUSD PAINT SHOP		B	12,414	12,414	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89888	423	PAT MACHINE SHOP		B	7,791	7,791	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89891	431	ACCELERATOR RESCH CNTR		B	54,545	54,545	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89893	432	IMF MANAGED LAB FACILITY		B	33,575	33,575	-			112 SC	O	N	Covered	3,031	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89896	433	LABOR ONLY METAL SHOP		B	5,793	5,793	-			112 SC	O	N	Not Covered								
Lawrence Livermore	14002	001	89897	435	VACANT		B	57,724	57,724	-			112 SC	O	N	Not Covered								
Lawrence Livermore	14002	001	89898	436	AXION		B	9,745	9,745	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89901	438	ERD OFC-FIELD OPERATIONS		B	16,262	16,262	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89908	439	INSTITUTIONAL COMPUTING/A		B	12,055	12,055	-			112 NNSA	O	N	Covered	23,131	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89913	442	ERD / D&D OPERATIONS		B	4,169	4,169	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89914	443	VACANT		B	8,953	8,953	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89915	444	VACANT		B	805	805	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89918	445	VACANT		B	5,100	5,100	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89919	446	VACANT		B	1,743	1,743	-			112 SC	O	N	Not Covered								
Lawrence Livermore	14002	001	89922	451	COMPUTATION FACILITY BLDG	G - Metered intensive	B	51,398	29,177	22,221	Electric meters		112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90062	452	COMPUTATION FACILITY BLDG.		B	492	492	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	200806	453	TERA SCALE FACILITY	G - Metered intensive	B	240,598	192,598	48,000	TSF facilities in		112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	143564	471	CENTRAL CAFETERIA		B	16,086	16,086	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89931	473	VACANT		B	205	205	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89932	481	OFFICE		B	61,165	61,165	-			112 NNSA	O	N	Covered	2,531	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89933	482	OFFICE		B	108,000	108,000	-			112 NNSA	O	N	Covered	9,923	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89934	490	IMF MANAGED LAB FACILITY		B	216,789	216,789	-			112 NNSA	O	N	Covered	44,890	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Livermore	14002	001	89937	491	VACANT		B	13,259	13,259	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89938	492	VACANT		B	9,550	9,550	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89942	493	SUPPORT FACILITY/STORAGE		B	19,100	19,100	-			112 NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89943	494	STORAGE		B	29,961	29,961	-			112 NNSA	O	N	Not Covered								

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Lawrence Live	14002	001	137823	501	DUS OFFICE		T	210	210	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89945	509	MUSD SHEET MTL SHOP STO		B	254	254	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89946	510	MUSD / FACS / UPS BATTERY BANK		B	144	144	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89951	511	MUSD / CRAFTS SHOP		B	77,078	77,078	-		112	NNSA	O	N	Covered	3,007		2015	2015 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Live	14002	001	89952	512	MUSD / CRAFTS SUPPLIES		B	5,896	5,896	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89958	515	MUSD / CRAFTS STORAGE		B	8,409	8,409	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89959	516	PE/CRAFTS FACILITY/ME		B	6,496	6,496	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89960	517	ELECT UTILITY OFFICES		B	6,090	6,090	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89965	519	MUSD / HEAVY EQUIPMENT REPAIR		B	10,006	10,006	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89966	520	MUSD / PESTICIDE STORAGE		B	400	400	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89968	522	LABOR ONLY RESTROOM FACILITY		B	516	516	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89971	523	LABOR ONLY / WELD / CARPTRY WK		B	3,507	3,507	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89972	525	LABOR ONLY ELECT		B	1,080	1,080	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89973	531	ICS OFFICE		B	12,381	12,381	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	136930	532	EPD/ORAD SERVICE BLDG		T	215	215	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89975	533	EPD/DO STORAGE		B	320	320	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89978	543	O&B / PFS / SHMR OFFICES		B	78,261	78,261	-		112	SC	O	N	Covered	3,806		2014	2014 Walk-Through	No	Completed	Portfolio Manager	
Lawrence Live	14002	001	89985	571	NIF OFFICE		B	41,407	41,407	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	140320	581	THE NATIONAL G - IGNITION FACILITY	Metered intensive	B	696,968	3,796	693,172	Electric power	112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	140857	582	SERVICE BUILDING		B	2,933	2,933	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	203637	583	OFFICE		B	21,793	21,793	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89992	591	NIF STORAGE		B	3,200	3,200	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	90003	597	ERD CORP YARD		B	260	260	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	143692	610	TRUCK INSPECTION STATION		B	4,314	4,314	-		112	NNSA	O	N	Not Covered								

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Lawrence Liver 14002	001		90016	611	AUTO FLEET MAINTENANCE		B	15,018	15,018	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90017	612	EPD/RHWM WASTE TSDF		B	7,015	7,015	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90021	614	EPD/RHWM WASTE TSDF		B	1,221	1,221	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90022	615	DUS OFFICE		B	3,525	3,525	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90023	616	DONATION UTIL&SALES		B	2,273	2,273	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90027	619	DONATION UTIL&SALES		B	2,038	2,038	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		140321	622	F&I CORP. YARD		B	1,033	1,033	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90029	624	EPD/RHWM OFFICE		B	240	240	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90030	625	EPD/RHWM WASTE TSDF		B	4,854	4,854	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90035	651	VISITOR CENTER		B	2,381	2,381	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90036	652	PUBLIC AFFAIRS STORAGE		B	208	208	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		202698	653	EPD SAMPLE STAGING		T	96	96	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90040	663	HEALTH SERVICES		B	24,786	24,786	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90041	671	PROCUREMENT		B	41,476	41,476	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		137350	681	OPTICS ASSEMBLY BLDG	G - Metered intensive	B	46,819	-	46,819	Electric power		112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		140859	684	CHEMICAL STORAGE		B	278	278	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90042	691	IMF MANAGED LAB FACILITY		B	18,437	18,437	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		90044	693	EPD/RHWM WASTE STORAGE		B	12,000	12,000	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		132382	694	EPD/RHWM OFFICE		B	10,590	10,590	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		140676	695	EPD/RHWM LIQUID WST PROCSSING		B	46,504	46,504	-			112 NNSA	O	N	Covered	5,226	2014	2014 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Liver 14002	001		135831	696	EPD/RHWM WST PRCSSING-SOLID		B	21,381	21,381	-			112 NNSA	O	N	Not Covered								
Lawrence Liver 14002	001		135832	697	EPD/RHWM WRHS-CHEM EXCHG		B	4,118	4,118	-			112 NNSA	O	N	Not Covered								

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Lawrence Liver 14015	001		90524	803	EPD/ORAD STRG WRHS		B	1,719	1,719	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90525	804	STAGING AREA		B	107	107	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90526	805	INERT MACHNG/EXPL VS WST		B	6,830	6,830	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90528	807	HE MACHINING		B	1,575	1,575	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90533	811	VACANT		B	1,081	1,081	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90537	813	CHANGE HOUSE		B	2,870	2,870	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		131384	816	EXPLSE WASTE STRG FAC		B	1,223	1,223	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90543	819	PE/STORAGE-C&M SHOPS		B	828	828	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90545	821	CHEMISTRY STORAGE		B	650	650	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90547	824	HE STORAGE FACILITY		B	300	300	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90548	825	CHEM PROCESS FACILITY		B	1,370	1,370	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90549	826	CHEM PROCESS FACILITY		B	1,638	1,638	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90557	830	VACANT		B	1,764	1,764	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90559	833	EPD/ERD SERVICE-R&D		B	1,892	1,892	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90562	835	EPD/ERD STORAGE		B	1,216	1,216	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90564	837	VACANT		B	1,031	1,031	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90567	841	PE/STORAGE - C&M SHOPS		B	1,786	1,786	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90570	848	VACANT		B	1,300	1,300	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90571	850	VACANT		B	5,095	5,095	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90576	856	VACANT		B	1,613	1,613	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90579	859	STORAGE		B	1,500	1,500	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90580	860	STORAGE		B	298	298	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90581	865	VACANT		B	61,360	61,360	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90584	867	BUNKER SUPPORT FACILITY		B	4,342	4,342	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90585	869	PE/MAINT SHOP STORAGE		B	353	353	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90586	870	VACANT		B	4,000	4,000	-		112 NNSA		O	N	Not Covered								
Lawrence Liver 14015	001		90587	871	ADMINISTRATI ON		B	7,928	7,928	-		112 NNSA		O	N	Not Covered								

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Lawrence Live14015	001		90588	872	PE/PAINT SHOP		B	1,887	1,887	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90589	873	PE/C&M SHOPS		B	17,452	17,452	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90590	874	MECHANICAL SHOPS		B	19,972	19,972	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90591	875	PE/SUPPLY & MAINTENANCE		B	15,171	15,171	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90592	876	STORES & RECLAMATION		B	2,400	2,400	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90593	877	COMPUTER TECHL SUPPORT		B	3,352	3,352	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90594	878	PE/MAINT SHOP STORAGE		B	488	488	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90595	879	MOTOR POOL & GARAGE		B	2,879	2,879	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90596	880	VACANT		B	2,839	2,839	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90598	882	PFD COMM CENTER		B	4,912	4,912	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		137320	886	CHEMICAL STORAGE		T	36	36	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		137312	889	SITE 300 MEDICAL FACILITY		B	2,719	2,719	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		137313	890	SITE 300 FIRE STATION		B	6,863	6,863	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		90600	892	CENTRAL CONTROL POST		B	866	866	-		112 NNSA		O	N	Not Covered								
Lawrence Live14015	001		139177	895	EPD/ORAD OFFICE		B	380	380	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89558	1277	VACANT		T	4,058	4,058	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89559	1280	VACANT		T	5,644	5,644	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89597	1601	VACANT		T	2,228	2,228	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89598	1602	VACANT		T	2,160	2,160	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89603	1631	OFFICE		T	1,490	1,490	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89604	1632	VACANT		T	4,290	4,290	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89608	1677	IMF MANAGED OFFICE FACILITY		T	28,576	28,576	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89609	1678	VACANT		T	3,550	3,550	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89611	1680	VACANT		T	5,697	5,697	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		89991	1713	TOILET TRAILER		T	335	335	-		112 NNSA		O	N	Not Covered								
Lawrence Live14002	001		135609	1714	SHOWER FACILITY		T	270	270	-		112 NNSA		O	N	Not Covered								

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Lawrence Live	14002	001	89624	1726	JUPITER SUPPORT		T	2,160	2,160	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89625	1727	JUPITER TECH SUPPORT		T	1,837	1,837	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89627	1730	JUPITER VISITORS		T	2,100	2,100	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89629	1735	JUPITER MAIN OFFICE		T	3,261	3,261	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89630	1736	SECURITY TRAINING		T	4,526	4,526	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89633	1739	JUPITER OFFICES		T	5,646	5,646	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	135819	1802	TOILET TRAILER		T	411	411	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89642	1826	VACANT		T	3,590	3,590	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89647	1878	VACANT		T	6,292	6,292	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89648	1879	LABORATORY TRAINING CNTR		T	11,118	11,118	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89651	1884	VACANT		T	2,880	2,880	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89652	1885	VACANT		T	4,266	4,266	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89653	1886	ICS RECEIVING / STORAGE		T	3,643	3,643	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89654	1887	VACANT		T	5,108	5,108	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89655	1888	VACANT		T	11,520	11,520	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89656	1889	INSTITUTIONALY MANAGED MULTI-TENANT		T	17,380	17,380	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89659	1925	PAT		T	2,236	2,236	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89661	1927	VACANT		T	2,160	2,160	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	128145	2180	VACANT		T	1,764	1,764	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89715	2512	VACANT		T	360	360	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89717	2525	VACANT		T	2,160	2,160	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	90046	2552	VACANT		T	2,100	2,100	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	89726	2554	VACANT		T	740	740	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89728	2580	SECURE COMMUNICATION CENTER		T	4,203	4,203	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	90001	2625	VACANT		T	240	240	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89790	2627	VACANT		T	1,867	1,867	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89735	2632	SECURITY		T	2,202	2,202	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89738	2679	VACANT		T	12,310	12,310	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89739	2684	VACANT		T	5,284	5,284	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89740	2685	VACANT		T	4,320	4,320	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89741	2687	VACANT		T	2,100	2,100	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89743	2701	SECURITY SHOWER TRAILER		T	720	720	-		112 NNSA	O	N		Not Covered								

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Lawrence Livermore	14002	001	89628	2726	OFFICE		T	2,098	2,098	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89650	2727	LOCKS AND KEYS		T	5,090	5,090	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89996	2728	VACANT		T	2,130	2,130	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89748	2775	SECURITY		T	9,831	9,831	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89750	2777	SECURITY ARMORY		T	1,400	1,400	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89751	2787	SECURITY FITNESS FACILITY		T	2,160	2,160	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89753	2801	VACANT		T	2,130	2,130	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89754	2802	VACANT		T	2,130	2,130	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89832	2808	TOILET TRAILER		T	238	238	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89759	2825	OFFICE		T	5,922	5,922	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89762	2925	VACANT		T	4,917	4,917	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89778	3180	VACANT		T	4,371	4,371	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89783	3203	MATERIAL FABRICATION DIV		T	649	649	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89784	3204	VACANT		T	649	649	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89789	3226	VACANT		T	3,077	3,077	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	143411	3304	TOILET TRAILER		T	128	128	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	140533	3340	OFFICES		T	2,160	2,160	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89810	3427	VACANT		T	6,365	6,365	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89816	3526	HUMAN RELIABILITY PROGRAM		T	2,165	2,165	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89817	3527	DOE OFFICES		T	9,782	9,782	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	133598	3555	HUMAN RELIABILITY PROGRAM		T	508	508	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89820	3577	VACANT		T	4,614	4,614	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89826	3649	BIOSCIENCES RESEARCH		T	4,800	4,800	-		112	SC	O	N	Not Covered								
Lawrence Livermore	14002	001	89834	3724	COMPUTATION FACILITY BLDG		T	19,810	19,810	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89835	3725	NIF DIRECTORATE OFFICES		T	19,867	19,867	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89836	3726	NIF DIRECTORATE OFFICES		T	19,824	19,824	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89840	3751	VACANT		T	2,160	2,160	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89843	3775	VACANT		T	1,440	1,440	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89857	3925	REDWOOD RM.-CONF./CLASSROOM		T	1,081	1,081	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89860	3982	VACANT		T	1,920	1,920	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89867	4107	VACANT		T	388	388	-		112	NNSA	O	N	Not Covered								

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Lawrence Live	14002	001	89921	4113	PAINT SHOP STORAGE		T	203	203	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89890	4302	ERD OFFICES		T	5,022	5,022	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89892	4316	VACANT		T	299	299	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	140566	4352	ERD OFC-FIELD OPERATIONS		T	240	240	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89899	4377	ERD OFFICES		T	4,920	4,920	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89900	4378	ERD OFFICES		T	5,180	5,180	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89588	4382	VACANT		T	3,600	3,600	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89902	4383	VACANT		T	4,988	4,988	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	89903	4384	VACANT		T	1,577	1,577	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	89904	4385	VACANT		T	3,744	3,744	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89906	4387	VACANT		T	3,658	3,658	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	89907	4388	VACANT		T	320	320	-		112 EM	O	N		Not Covered								
Lawrence Live	14002	001	89911	4406	VACANT		T	1,560	1,560	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89920	4475	VACANT		T	4,176	4,176	-		112 SC	O	N		Not Covered								
Lawrence Live	14002	001	89923	4525	COMPUTATION FACILITY BLDG		T	5,713	5,713	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89924	4576	COMPUTATION FACILITY BLDG		T	848	848	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89925	4675	EMPLOYEE RESOURCES		T	11,287	11,287	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89926	4725	VACANT		T	9,389	9,389	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89927	4726	S&T / COMP		T	9,384	9,384	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89928	4727	O&B TID LIBRARY		T	9,891	9,891	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89929	4728	COMPUTATION S		T	6,762	6,762	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89930	4729	O&B TID LIBRARY		T	10,018	10,018	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89935	4905	VACANT		T	322	322	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89936	4906	VACANT		T	322	322	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	143340	4924	VACANT		T	638	638	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89941	4926	VACANT		T	1,638	1,638	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89949	5104	INDUSTRIAL GAS FACILITY		T	624	624	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89950	5105	LABOR ONLY CONSTRUCTION		T	510	510	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89953	5125	LABOR ONLY CONSTRUCTION OFFICE		T	2,912	2,912	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89967	5207	MUSD / AC STORAGE		T	320	320	-		112 NNSA	O	N		Not Covered								
Lawrence Live	14002	001	89969	5225	LABOR ONLY CONSTRUCTION OFFICE		T	1,952	1,952	-		112 NNSA	O	N		Not Covered								

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Lawrence Livermore	14002	001	89970	5226	VACANT		T	2,548	2,548	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89976	5425	VACANT		T	5,260	5,260	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89977	5426	VACANT		T	5,180	5,180	-		112	EM	O	N	Not Covered								
Lawrence Livermore	14002	001	89979	5475	ICS DEPT OFFICE		T	32,368	32,368	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89980	5477	IMF MANAGED OFFICE FACILITY		T	6,693	6,693	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89983	5626	AUDIT & OVERSIGHT		T	4,356	4,356	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89984	5627	LEGAL SERVICES		T	8,470	8,470	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	141330	5675	STAFF RELATIONS		T	4,277	4,277	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90019	6127	EPD/RHWM OFFICE		T	1,560	1,560	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90024	6178	EPD/RHWM OFF/CHANGE HOUSE		T	1,040	1,040	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90025	6179	EPD/RHWM OFFICE		T	3,904	3,904	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89742	6205	MUSD HEAVY EQUIP. STORAGE		T	404	404	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89818	6206	IE STORAGE		T	684	684	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	201383	6301	RIGGER STORAGE		T	732	732	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90032	6325	VACANT		T	4,320	4,320	-		112	EM	O	N	Not Covered								
Lawrence Livermore	14002	001	89865	6424	VACANT		T	390	390	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89994	6426	VACANT		T	2,100	2,100	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	209507	6475	HIGH PERFORMANCE COMPUTING		B	12,070	12,070	-		112	NNSA	C	N	Not Covered								
Lawrence Livermore	14002	001	90034	6501	PUBLIC AFFAIRS OFFICE		T	908	908	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90037	6525	VISITORS CTR AUDITRM		T	971	971	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90038	6526	PUBLIC AFFAIRS OFFICE		T	2,756	2,756	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89667	6527	VACANT		T	2,115	2,115	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90039	6575	PUBLIC AFFAIRS OFFICE		T	1,460	1,460	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89730	6870	OFFICE		T	1,416	1,416	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	533	6901	TOILET TRAILER		T	520	520	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90043	6925	OFFICES		T	5,873	5,873	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89781	6926	OFFICES		T	2,160	2,160	-		112	NNSA	O	N	Not Covered								

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Lawrence Livermore	14002	001	89631	6928	OFFICES		T	1,912	1,912	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	201479	6929	NIF OFFICE TRAILER		T	4,925	4,925	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	201480	6930	NIF OFFICE TRAILER		T	5,937	5,937	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	90045	6951	EPD/RHWM SERVICE BUILDING		T	1,440	1,440	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	143464	6989	TOILET TRAILER		T	756	756	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	137861	7990	DINE COLLEGE OFFICES		T	880	880	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90561	8340	EPD/ERD SRVC-MNTRNG TF834		T	282	282	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	204013	8580	BREAKROOM TRAILER		T	384	384	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	136739	8724	EPD/ERD SERVICE-R&D		T	322	322	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	128006	8726	EPD/ERD OFFICE		T	953	953	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90597	8806	VACANT		T	509	509	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	132064	8825	SHOWER FACILITY		T	370	370	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	132065	8826	SECURITY FITNESS		T	943	943	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90601	8990	B899 A&B WASH UP FACILITY		T	281	281	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	135719	8991	INSTRUCTOR FACILITY		T	480	480	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89495	002LS	LANDSCAPING		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	208114	003A	S Program		B	3,750	3,750	-		112	NNSA	C	N	Not Covered								
Lawrence Livermore	14002	001	204000	012D	EAST AVENUE SECURITY STORAGE		B	205	205	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14002	001	89503	021CA	CMPRSSED AIR SYS COMPRESSOR		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89504	022CA	CMPRSSED AIR SYS COMPRESSOR		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89505	023CA	CMPRD AIR SYS DIST LINES		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89506	02AL	SITIEWIDE ACCELERATOR S		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89508	02CND	RETURN LINES / CONDENSATE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89509	02CSL	COMM SYSTEM LINES		S		-	-		112	NNSA	O		Not Covered								

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Lawrence Livermore 14002	001		112	02EDT	ELECTRIC DISTRIBUTION TRANSFORMERS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89511	02EGU	UTIL ELECTRIC GENERATORS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89512	02EPL	UTIL ELECTRIC DISTRIBUTION LINES		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89513	02EPT	ELECTRIC POWER DISTRIBUTION TRANSFORMERS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89514	02ESL	UTIL ELECTRIC DISTRIBUTION LINES		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89515	02FAS	FIRE ALARM SYSTEM		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89516	02FNC	ALL OTHER FENCES		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89517	02GAWR	GARAGE AUTOWASH RACK		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89520	02GSDL	GAS SYSTEM DISTRIBUTION LINES		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89524	02LGS	UTIL ELECTRIC SUBSTATIONS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		1	02LLIX	LLIX CABLE SYSTEM		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89525	02MFEST	ERD STORAGE AREA		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89526	02OST	STORAGE OILTANKS TO-1		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89527	02PRK	ALL OTHER PARKING AREAS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89529	02RDP	ROADS PAVED		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89530	02RDU	ROADS UNPAVED & IMPROVED		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89531	02RTW	RETAINING WALLS		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89532	02SAS	SECURITY ALARM SYSTEM		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89533	02SCL	ALL OTHER SECURITY LIGHTING		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89534	02SCSG	SEWER COLLECTION SYSTEM GRAVITY		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89535	02STL	ALL OTHER STREET LIGHTING		S		-	-			112 NNSA	O		Not Covered								
Lawrence Livermore 14002	001		89536	02STM	SUPPLY LINES / STEAM		S		-	-			112 NNSA	O		Not Covered								

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Lawrence Live14002	001		89537	02SWCS	STORM WATER COLL SYS GRAV		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14002	001		89538	02SWP	ALL OTHER SIDEWALKS & PATHS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14002	001		89540	02TS	TRUCK SCALE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14002	001		89541	02WRS	WASTE RETENTION SYSTEM		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14002	001		127068	132N	DPRF		B	251,316	251,316	-		112	NNSA	O	N	Covered	19,105	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Live14002	001		89562	132S	G.S		B	219,385	219,385	-		112	NNSA	O	N	Covered	14,928	2013	2013 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Live14015	001		90498	15AL	SITEWIDE ACCELERATOR S		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90499	15CASC	CONPRD AIR SYS COMPRESS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90500	15CSL	COMM SYSTEM LINES		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90501	15CW	WATER SYS POTBL DIST		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90502	15EDT	ELECT DIST TRANSFORMER S		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90503	15EGV	UTILITY ELEC GENERATORS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90504	15EPL	UTIL PRI ELEC DIST LINES		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90505	15EPT	ELEC POWER TRANSFORMER S		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90506	15ESL	UTIL ELEC SEC DIST LINES		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90507	15FAS	FIRE ALARM SYSTEM		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90508	15FNC	ALL OTHER FENCES		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90509	15GDS	GAS DIST SYSTEM		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90510	15HS	HEATING SYS / BOILERS / OIL		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90511	15LGS	UTIL ELEC SUBSTATIONS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90512	15LS	LANDSCAPING		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90513	15RW	RETAINING WALL		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live14015	001		90514	15RWPA	ROADS WALKS PAVED AREAS		S		-	-		112	NNSA	O		Not Covered								

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Lawrence Live	14015	001	90515	15SAS	SECURITY ALARM SYSTEM		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90516	15SCL	ALL OTHER SECURITY LIGHTGS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90517	15SCSG	SEWAGE COLL SYS GRAVITY		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90518	15SOT	STORAGE OIL TANK		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90519	15SPS	SEWAGE POND / SEPTIC & RETN TKS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90520	15STL	ALL OTHER STREET LIGHTING		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	90640	15WST	WATER STORAGE TANKS - 11		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	128200	170A	VACANT		B	800	800	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	134179	193A	EPD/ORAD SRVC-MNTRNG STAT		B	151	151	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89663	194A	VACANT		B	240	240	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	129496	196A	EPD/ORAD STORAGE		B	112	112	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	201360	231A	BEAD BLASTER-RECEIVING		T	110	110	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89766	297A	MUSD CLASS DOC DESTRUCTION		B	320	320	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	138782	312A	VACANT		B	107	107	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89786	321A	MATERIALS FAB SHOP		B	59,515	59,515	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	205437	321B	MATERIALS FAB SHOP		B	7,511	7,511	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	205438	321C	MATERIALS FAB SHOP		B	78,335	78,335	-		112	NNSA	O	N	Covered	28,000	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Live	14002	001	89787	321D	EE FABRICATION		B	2,106	2,106	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	139832	321E	MMED BOILER ROOM		B	2,581	2,581	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89791	322A	PLATING SHOP ANNEX		B	340	340	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	129497	335A	EMRGCY RESPONSE FACILITY		B	64	64	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	129498	335B	EMRGCY RESPONSE FACILITY		B	64	64	-		112	NNSA	O	N	Not Covered								
Lawrence Live	14002	001	89957	514A	VACANT		B	2,473	2,473	-		112	EM	O	N	Not Covered								
Lawrence Live	14002	001	89963	517A	MUSD / CUSTODIAN LAUNDRY RM		B	462	462	-		112	NNSA	O	N	Not Covered								

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Lawrence Livermore 14002		001	136929	518A	INDUSTRIAL GAS STORAGE		T	195	195	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14002		001	138127	519A	HEAVY EQUIPMENT STORAGE		T	401	401	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14002		001	130291	551E	O&B / F&I OFFICES		B	41,068	41,068	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14002		001	130292	551W	BUS/NCOP/TID/SCM		B	65,776	65,776	-		112	NNSA	O	N	Covered	4,983	2015	2015 Walk-Through		No	Completed	Portfolio Manager	
Lawrence Livermore 14002		001	136921	597A	ERD RESTRM & SHWR FAC		B	99	99	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14002		001	90020	612A	EPD/RHWM WASTE TSDF		B	4,283	4,283	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90522	801A	FIRING FACILITY(FXR)		B	44,262	44,262	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133958	801B	TECHNICAL MAINTENANCE SHOP		B	790	790	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133961	801D	ADMINISTRATI ON		B	4,686	4,686	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90523	802A	VACANT		B	3,264	3,264	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90527	806A	HE MACHINING		B	3,417	3,417	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133963	806B	HE MACHINING		B	4,088	4,088	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	130264	806C	MACHINING STORAGE		B	640	640	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133967	806D	MACHINING STORAGE		B	192	192	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90530	809A	HE PRESSING		B	2,570	2,570	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	143694	809B	MECHANICAL SUPPORT		B	617	617	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	139520	809C	HE OVEN FACILITY		B	606	606	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90532	810A	HE ASSEMBLY		B	3,365	3,365	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133974	810B	HE ASSEMBLY		B	921	921	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	133975	810C	ASSEMBLY STORAGE		B	914	914	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90534	812A	VACANT		B	2,656	2,656	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	134157	812D	VACANT		B	325	325	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	134160	812E	LABORATORY		B	1,310	1,310	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore 14015		001	90539	817A	HE PRESSING CONTROL ROOM		B	417	417	-		112	NNSA	O	N	Not Covered								

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Lawrence Livermore	14015	001	133981	817B	HE PRESSING CELL		B	639	639	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133984	817D	HE PRESSING STORAGE		B	207	207	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133985	817E	HE PRESSING-INACTIVE		B	186	186	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133986	817F	HE PRESSING OVENS		B	526	526	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133987	817G	HE PRESSING BOILERS		B	237	237	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133988	817H	HE PRESSING INERT STORAGE		B	890	890	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90541	818A	HE STORAGE FACILITY		B	1,244	1,244	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133989	818C	HE STORAGE FACILITY		B	578	578	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90546	823A	LINAC RADIOGRAPHY		B	1,089	1,089	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133990	823B	LINAC RADIOGRAPHY		B	1,842	1,842	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90550	827A	CHEMISTRY BLDG		B	4,539	4,539	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90551	827B	SERVICE SHOP		B	871	871	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90552	827C	CHEM PROCESS FACILITY		B	4,579	4,579	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90553	827D	CHEM PROCESS FACILITY		B	4,579	4,579	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90554	827E	CHEM PROCESS FACILITY		B	4,407	4,407	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90555	828A	OFFICE		B	212	212	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133991	828B	HE MACHINING-INACTIVE		B	199	199	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133992	828C	HE MACHINING-INACTIVE		B	258	258	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90558	832A	STORAGE		B	540	540	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133994	832C	STORAGE		B	335	335	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133996	832E	MM OFFICE/SHIP&RECEIVE		B	1,581	1,581	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	90560	834A	THERMAL TEST FACILITY		B	1,694	1,694	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133997	834B	VACANT		B	751	751	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	130265	834C	VACANT		B	751	751	-		112	NNSA	O	N	Not Covered								
Lawrence Livermore	14015	001	133998	834D	VACANT		B	1,694	1,694	-		112	NNSA	O	N	Not Covered								

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Lawrence Liver	14015	001	134000	834E	VACANT		B	998	998	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134001	834F	VACANT		B	649	649	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134002	834G	VACANT		B	527	527	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134003	834H	THERMAL TEST FACILITY		B	998	998	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134004	834J	VACANT		B	511	511	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	130266	834K	PUMP STATION		B	545	545	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134005	834L	VACANT		B	1,281	1,281	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90563	836A	DYNAMIC TEST FACILITY		B	2,191	2,191	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134007	836B	VACANT		B	4,505	4,505	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134010	836C	VACANT		B	2,900	2,900	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134011	836D	DYNAMIC TEST FACILITY		B	3,427	3,427	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90568	843A	EPD/ERD CORP YARD		B	486	486	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	131922	843B	EPD/ERD STORAGE		B	402	402	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90569	845A	EXPL WASTE TREATMNT FAC		B	431	431	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	133564	845B	EWTF		B	290	290	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90572	851A	FIRING FACILITY		B	12,996	12,996	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134014	851B	MACHINE SHOP		B	985	985	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134701	851C	FABRICATION SHOP		B	652	652	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90574	854A	VACANT		B	2,458	2,458	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	90575	855A	HE MACHINING		B	667	667	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134046	855B	HE MACHINING		B	637	637	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	134047	855C	HE MACHINING		B	612	612	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	129504	874A	VACANT		T	279	279	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	129505	874B	VACANT		T	279	279	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	138146	899A	GUN SHOP		B	572	572	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14015	001	138147	899B	PISTOL RANGE TRNING/OFFICE		B	688	688	-		112	NNSA	O	N	Not Covered								
Lawrence Liver	14002	001	90049	CW01	WATER SYS POT DISTRIBUTION		S		-	-		112	NNSA	O		Not Covered								
Lawrence Liver	14002	001	90050	CW02	WATER SYS POT SUPPLY LINE		S		-	-		112	NNSA	O		Not Covered								

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Lawrence Livermore	14002	001	90051	CW03	WATER SYS POT STA(ZONE7)		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90052	CW06	STORAGE WATER TANKS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90053	DW001	WATER SYS DW TREAT PLTS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90054	DW002	WATER SYS DW DIST		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90056	LCW06	CLG WATER SYS DISTRIBUTION		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	204001	OS012A	SECURITY KIOSK		S		26	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	204002	OS012B	SECURITY KIOSK		S		26	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	204003	OS012C	SECURITY KIOSK		S		26	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130229	OS041S	SECURITY KIOSK		S		60	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130228	OS071N	SECURITY KIOSK		S		132	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130227	OS113E	SECURITY KIOSK		S		34	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	136771	OS122S	SECURITY KIOSK		S		217	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130225	OS122W	SECURITY KIOSK		S		60	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130204	OS169WA	EPD/RHWM WASTE ACC AREA		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	201336	OS231S	SECURITY KIOSK		S		90	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	136985	OS235N	SECURITY KIOSK		S		32	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	136773	OS243W	SECURITY KIOSK		S		32	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90073	OS270	PROGRAMMATIC STORAGE SO PRO FORCE		S		433	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90058	OS273	LINE OF SITE VAULT		S		831	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130207	OS298A	OUTSIDE STORAGE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130226	OS316N	SECURITY KIOSK		S		49	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	201318	OS321E	SECURITY KIOSK		S		54	-		112	NNSA	O		Not Covered								

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Lawrence Livermore	14002	001	130208	OS321WAA	BUILDING 321 WAA		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130209	OS332WAA	BUILDING 332 WAA		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90059	OS338	GUARD TOWER		S		416	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130210	OS361WAA	BIO WST ACCUMLTN AREA		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90061	OS394	VACANT		S		144	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	136774	OS415W	SECURITY KIOSK		S		154	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	130211	OS418WAA	BUILDING 418 WAA		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	200870	OS454	TSF COOLING TOWERS		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	89944	OS495	STORAGE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	207155	OS513	E85 FUELING STATION		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90063	OS518	GAS CYLINDER DOCK		S		3,270	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	204249	OS601	GUARD KIOSK		S		83	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	144392	OS610E	SECURITY KIOSK		S		49	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	11	OS621	CNG FUEL STATION		S		824	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	136775	OS651N	SECURITY KIOSK		S		92	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	90064	OS665	MEDICAL TRIAGE AREA		S		576	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	140981	OS682	NIF CENTRAL PLANT		S		-	8,880		112	NNSA	O		Not Covered								
Lawrence Livermore	14002	001	140860	OS683	NIF COOLING TOWER		S		-	2,104		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90535	OS812B	VACANT		S		995	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90536	OS812C	VACANT		S		1,007	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	203715	OS812P	MITIGATION POND		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	135317	OS845C	EWTF BURN PAD		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90578	OS858	DROP TOWER COMPLEX STORAGE		S		1,506	-		112	NNSA	O		Not Covered								

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Lawrence Livermore	14015	001	134294	OS858B	DROP TOWER - VACANT		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90611	OS883	EPD/RHWM CNTNR STRG UNIT		S		3,829	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131777	OS891	MAIN GATE KIOSKS A		S		50	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90613	OS894	PROCESS AREA POST		S		152	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90615	OS896A	EAST OBSERVATION POST		S		33	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90616	OS897	WEST CONTROL POST		S		294	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90617	OS898	WEST OBSERVATION POST		S		572	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90618	OS899	PISTOL RANGE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	136722	OS899C	LIVE FIRE HOUSE		S		11,140	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	138148	OS899D	RIFLE RANGE		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90619	OSM1	MAGAZINE-STORAGE VAULT		S		387	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	143336	OSM10	HE STORAGE MAGAZINE		S		104	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	143203	OSM15	HE STORAGE MAGAZINE		S		120	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90620	OSM2	HE WASTE STORAGE MAGAZINE		S		538	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131778	OSM21	MAGAZINE-STORAGE VAULT		S		386	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131779	OSM22	MAGAZINE-STORAGE VAULT		S		390	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131780	OSM23	MAGAZINE - STORAGE VAULT		S		369	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131781	OSM24	MAGAZINE-STORAGE VAULT		S		48	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90621	OSM3	HE WASTE STORAGE MAGAZINE		S		137	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90622	OSM30	MAGAZINE-STORAGE VAULT		S		386	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90623	OSM31	MAGAZINE-STORAGE VAULT		S		389	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90624	OSM32	MAGAZINE-STORAGE VAULT		S		389	-		112	NNSA	O		Not Covered								

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Lawrence Livermore	14015	001	90625	OSM33	HE STORAGE MAGAZINE		S		139	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90626	OSM34	MAGAZINE-HE CUBCL STRGE		S		36	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90602	OSM35	MAGAZINE-STORAGE VAULT		S		386	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90603	OSM36	HE STORAGE MAGAZINE		S		386	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90604	OSM37	MAGAZINE-HE CUBCL STRGE		S		36	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	132166	OSM38	MAGAZINE-STORAGE VAULT		S		641	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90627	OSM4	HE WASTE STORAGE MAGAZINE		S		137	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	132167	OSM41	MAGAZINE-STORAGE VAULT		S		641	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131782	OSM5	HE WASTE STORAGE MAGAZINE		S		140	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90628	OSM51	HE STORAGE MAGAZINE		S		138	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	134700	OSM52	MAGAZINE-STORAGE VAULT		S		492	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	203825	OSM58	STORAGE MAGAZINE		S		61	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90630	OSM7	MAGAZINE-STORAGE VAULT		S		387	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90631	OSM70	MAGAZINE-STORAGE VAULT		S		305	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90632	OSM71	MAGAZINE-STORAGE VAULT		S		136	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90633	OSM72	MAGAZINE-STORAGE VAULT		S		136	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90634	OSM8	MAGAZINE-STORAGE VAULT		S		387	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90635	OSM80	M80 READY VAULT		S		389	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	136582	OSM817C	HE STORAGE MAGAZINE		S		366	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	131309	OSM82	MAGAZINE - STORAGE		S		62	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	90636	OSM83	M83 READY VAULT		S		422	-		112	NNSA	O		Not Covered								
Lawrence Livermore	14015	001	136583	OSM832B	EXPLOSIVES STORAGE		S		568	-		112	NNSA	O		Not Covered								

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Lawrence Live	14015	001	136584	OSM832D	HE SHIPPING AND RECEIVING		S		572	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	134140	OSM834M	HE STORAGE		S		1,690	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	134043	OSM854H	MAGAZINE STORAGE		S		3,205	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	134139	OSM854V	STORAGE		S		500	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	136585	OSM857	MAGAZINE STORAGE VAULT		S		457	-		112	NNSA	O		Not Covered								
Lawrence Live	14015	001	135970	OSV822AD	CONTRL MTLs-STRG VAULT		S		297	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90066	U011	ERD TREATMNT FAC A		S		402	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90067	U042	ERD TREATMNT FAC B		S		402	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90069	U119	TELCOM NODE #11		S		2,061	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	131805	U172	TELCOM NODE #12		S		675	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90070	U187	ERD TREATMNT FAC		S		1,225	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90071	U193	SEWER DIVERSION FAC		S		72	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	89745	U271T	MICROWAVE TOWER		S		-	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133599	U283	TELCOM NODE #3		S		216	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90074	U291	LCW STATION		S		6,981	-		112	NNSA	O		Covered	34,091	2016	2016 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Live	14002	001	90075	U295	PUMP HOUSE		S		1,128	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133600	U299	TELCOM NODE #4		S		675	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133601	U313A	TELCOM NODE #10		S		216	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90076	U313B	HC EMRGCY COMM RADIO CTR		S		336	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90078	U325	LCW CONTROL		S		5,072	-		112	NNSA	O		Covered	35,695	2015	2015 Walk-Through	No	Completed	Portfolio Manager		
Lawrence Live	14002	001	131775	U328C	PE/LCW CONTROL BLDG		S		300	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90079	U416	BOILER FACILITY		S		743	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90080	U424	ELECTRICAL SUBSTATION		S		4,456	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133602	U430	TELCOM NODE #9		S		675	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133603	U448	TELCOM NODE #8		S		675	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	133604	U470	TELCOM NODE #2		S		675	-		112	NNSA	O		Not Covered								
Lawrence Live	14002	001	90081	U472	ERD TREATMENT FAC D		S		1,313	-		112	NNSA	O		Not Covered								

Site Name	Site	Area	Seq No	Prop ID	Prop Name	Excl Part	Prop Type	GSFT	EC Bldg Fac	EC Metered	Justification	EMS Site	Program	Owners hip	Outgrant Ind	Covered or Not Covered?	Estimated Total Energy Used (10^6 x Btu/Yr)	Anticipated or Actual Energy Evaluation Date (MM/YY)	Anticipated or Actual Water Evaluation Date (MM/YY)	Anticipated or Actual Evaluation Type/Level	Retro/Re-Commissioning Assessment	Benchmarking Status	Benchmarking System	Additional Information
Lawrence Livermore 14002		001	133605	U599	TELCOM NODES 5&6		S		688	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14002		001	136630	U6042	MOCHO POT PUMP STA HH		S		352	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14002		001	136631	U6047	SANDIA WTR TNKS CNTRL STATN		S		268	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14002		001	133606	U664	TELCOM NODE #7		S		216	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	90639	U815	CNTRL AIR PLANT/STRG		S		1,300	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	133274	U842	INSTAL COMM HUT#1		S		411	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	129606	U844	CW BOOSTER STATION #1		S		374	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	90641	U846	ELECTRICAL SUBSTATION		S		497	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	131776	U847	CW BOOSTER STATION #2		S		350	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	90642	U849	COMM RADIO TRANS		S		100	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	140985	U849A	COMM RADIO TWR CNTRL BLDG		S		138	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	140983	U849B	COMM TWR GENERATOR BLDG		S		177	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	140984	U849C	COMM RADIO TWR CNTRL BLDG		S		336	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	90643	U853	CW BOOSTER STATION #3		S		352	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	136986	U865D	ELECTRICAL SUBSTATION		S		2,450	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	133275	U866	INSTAL COMM HUT #2		S		413	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	90599	U882T	S300 MICROWAVE TOWER		S		-	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	137314	U887	WELL 20 POTBL WATER WELL		S		141	-		112	NNSA	O		Not Covered								
Lawrence Livermore 14015		001	137315	U888	WELL 18 POTBL WATER WELL		S		171	-		112	NNSA	O		Not Covered								
								6,943,718	6,214,581	821,196								704,359						



1. DOE Building Exclusion Self-Certification Form FY12
2. LLNL Metering Plan Update, November 2012

DOE BUILDING EXCLUSION
SELF-CERTIFICATION FORM
FY 2012

FROM: Lawrence Livermore National Laboratory
Program Office Landlord: NNSA

TO: Sustainability Performance Office

DATE: October 19, 2012

SUBJECT: SELF CERTIFICATION FORM FOR THE ENERGY INTENSITY GOAL OF
EISA 2007

Each buildings or group of buildings that are to be excluded under the criteria for a Part G or Part H exclusion is/are metered for energy consumption and their consumption is reported annually.

If any building has been excluded under the criteria for Part H for impracticability then all practicable energy and water conservation measures with a payback of less than 10 years have been installed. A justification statement that explains why process-dedicated energy in the facility may impact the ability to meet the goal has been provided in the FIMS Report 063.

I certify that the buildings listed on the Excluded Buildings List produced by FIMS as Report 063 dated 24 September 2012 for Lawrence Livermore National Laboratory (page 1 of 1 attached) and the Other Structures listed in Part J (attached) meet the exclusion criteria in *Guidelines Establishing Criteria for Excluding Buildings* published by FEMP on January 27, 2006.

KAREN KING
DOE Site Office Official – printed name

Kc King
DOE Site Office Official signature

11/20/2012
Date

Contact Information:

Name: Carey Bailey
Title: Sustainability Program Manager
Phone: (925) 422-1295
eMail: bailey1@llnl.gov

Definitions of Exclusions PART B through PART H

PART B

— Building or group of buildings is privately owned and privately occupied but happen to be co-located on Federal lands or military installations. (Privately owned buildings listed in FIMS will not be excluded in this Part.)

PART C

— Building or group of buildings has Fully-Serviced Leases.

PART D

— Building or group of buildings is/are essentially structures such as outside parking garages which consume essentially only lighting energy, yet are classified or categorized as buildings.

PART E

— Building or group of buildings has energy usage that is skewed significantly due to reasons such as: buildings entering or leaving the inventory during the year, buildings down-scaled operationally to prepare for decontamination, decommissioning and disposal, and buildings undergoing major renovation and/or major asbestos removal.

PART F

— Building or group of buildings is/are leased space where the Government may pay for some energy but not all, the space comprises only part of a building, or the expiration date of the lease limits the ability to undertake energy conservation measures.

PART G

✓ — (BOTH statements in this part must be met for exclusion)
Building or group of buildings is/are separately-metered energy-intensive loads that are driven by mission and operational requirements, not necessarily buildings, and not influenced by conventional building energy conservation measures.

AND

✓ — Building or group of buildings is/are metered for energy consumption and their consumption will be reported annually.

PART H

— (BOTH statements in this part must be met for exclusion)
Building or group of buildings can demonstrate four critical findings at the excluded building(s): 1) Energy requirements are impracticable; 2) All Federally required energy management reports have been completed and submitted; 3) Has achieved compliance with all energy efficiency requirements; and 4) Implementation of all practicable, life cycle cost-effective projects.

AND

— Building or group of buildings is/are metered for energy consumption and their consumption will be reported annually.

Part J

FIMS Site Number	Site Name	Prop Sequence	Property ID	Prop Name	EXCLUSION PART	PROPERTY TYPE	Comments
14002	Lawrence Livermore National Laboratory	200806	453	TERA SCALE FACILITY	G	B	Note 1
14002	Lawrence Livermore National Laboratory	200870	OS 454	TSF COOLING TOWERS	G	S	Note 1
14002	Lawrence Livermore National Laboratory	89922	451	COMPUTATION FACILITY BLDG	G	B	Note 2
14002	Lawrence Livermore National Laboratory	140320	581	LTAB	G	B	Note 3
14002	Lawrence Livermore National Laboratory	137350	681	OPTICS ASSMBY BLDG	G	B	Note 3
14002	Lawrence Livermore National Laboratory	140981	OS 682	NIF CENTRAL PLANT	G	S	Note 3
14002	Lawrence Livermore National Laboratory	140860	OS 683	NIF COOLING TOWER	G	S	Note 3

Note 1 TSF facilities include B453 and OS 454. Electric metered data has been identified via review of 1-line diagrams and coordination with dedicated electric meter reports prepared by PE / Site Utilities Division / Electric Utilities Group using the MV-90 data collection software. The Computations facility management team identified process and building related, non-process, meters. The computer floor (48,000-SF) will be reported as Metered Process per the Instructions for DOE Building Exclusions Self-Certification guidance, because lighting and HVAC electric power use for the computer floor are included, to some part, and are not totally metered separately. The remaining building area of 193,197-SF will be reported as Energy Consuming Buildings/Facilities. Process energy use by the TSF, B453 and the cooling tower, OS 454 will be reported under "Metered Process"; facility area is 0-SF, thus, the reporting category is moot.

Note 2 Electric metered data has been identified via review of 1-line diagrams and coordination with the facility management team and reports from dedicated electric meter reports prepared by PE / Site Utilities Division / Electric Utilities Group using the MV-90 data collection software. The Computations facility management team identified process and building related, process & non-process, meters.

Building	22,221	SF - to Metered Process Category = Computer Operations areas per LLNL data base
Natural Gas Usage:	Virtually no reheat is used for the (process) computer area, thus, natural gas usage is NOT excluded.	

Note 3 Electric power and natural gas consumption by these facilities is excluded, placed into the Metered Process category for these facilities. The building areas have also been placed into the Metered Process category as lighting and HVAC energy use are not separately metered.

581	693,002	SF - to Metered Process Category
681	46,819	SF - to Metered Process Category
OS 682	8,880	SF - to Metered Process Category
OS 683	2,104	SF - to Metered Process Category

U.S. Department of Energy
Facilities Information Management System
Energy Consuming Excluded Buildings and Trailers List

09/24/2012

Program Office NNSA

Site 14002 Lawrence Livermore National Laboratory

Property ID Justification Comments:	Real Property Unique ID	Property Name	Exclusion Part	Property Type	Gross SQFT	Excluded SQFT
451	89922	COMPUTATION FACILITY BLDG G - Metered intensive loads		Building	51,398	22,221
Electric metered data has been identified via review of 1-line diagrams and coordination with the facility management team and reports from dedicated electric meter reports prepared by PE / Site Utilities Division / Electric Utilities Group using the MV-9						
453	200806	TERA SCALE FACILITY	G - Metered intensive loads	Building	240,598	48,000
TSF facilities include B453 and OS 454. Electric metered data has been identified via review of 1-line diagrams and coordination with dedicated electric meter reports prepared by PE / Site Utilities Division / Electric Utilities Group using the MV-90 dat						
9998	205760	THE AMERICAN RED CROSS	F - Lease some energy provided	Building	5,682	5,682
Lease						
681	137350	OPTICS ASSEMBLY BLDG	G - Metered intensive loads	Building	46,819	46,819
Electric power and natural gas consumption by these facilities is excluded, placed into the Metered Process category for these facilities. The building areas have also been placed into the Metered Process category as lighting and HVAC energy use are not						
581	140320	THE NATIONAL IGNITION FACILITY	G - Metered intensive loads	Building	696,968	693,172
Electric power and natural gas consumption by these facilities is excluded, placed into the Metered Process category for these facilities. The building areas have also been placed into the Metered Process category as lighting and HVAC energy use are not						

This report qualifies DOE Owned, DOE Leased, and Contractor Leased buildings and trailers where the Energy Consuming Metered Process (Excluded) Facilities gsft is greater than zero.



Lawrence Livermore National Laboratory

Metering Plan Update

November 2012

LLNL-ABS-509151



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Section 1. Executive Summary

Lawrence Livermore National Laboratory (LLNL) has a long history of metering electric usage. Electric meters have, for the most part, been installed at the distribution transformer rather than at the building.

NNSA's Metering Plan Guidance of August 2011 and Guidance for FY 2013 Site Metering Plan Updates highlighted the DOE 2011 Strategic Sustainability Performance Plan (SSPP) Metering Goals as follows:

- Install electricity meters on individual buildings or processes at each site so that these individually metered buildings and processes account for at least 90 percent of the site's consumption by October 1, 2012.
- Install natural gas, steam and chilled water meters on individual buildings or processes so that these individually metered buildings and processes account for at least 90 percent of the site's consumption by October 1, 2015 (90 percent for each utility).
- Individually meter all stand alone buildings that are not part of multi-building facilities for electricity, natural gas, steam, and chilled water.
- Independently meter 90% of agency data centers by October 1, 2015.

LLNL's commitment to support the DOE 2011 SSPP and comply with EPC Act 2005 and EISA 2007 regulations is further exemplified in this latest issue of its Metering Plan. LLNL is committed to monitor and reduce its energy usage and find innovative ways to lead the complex while at the same time meeting its mission goals.

By the end of FY12, LLNL's metering portfolio is as follows:

		Number of Meters	Number of Buildings
Electricity	Advanced Ind.	109	109
	Advanced Shared	138	268
	Standard	49	7
	No Meter	0	24
	Total	296	408
Natural Gas	Equipment Meters	25	10
	Building Meters	24	22
	No Meter	0	5
	Total	49	37
Water	Advanced	10	0
	Standard	13	1
	Total	23	1

A major significant challenge and/or risk to achieving the metering requirements by 1 October FY 2016 is the availability of funding. Metering projects are expected to compete with mission-related projects and other noteworthy energy conservation projects that are being evaluated as a result of the EISA facility audit recommendations.

Metering Investment Plan

The estimated funding required to fully implement natural gas metering is about \$3.5M and potable water metering, about \$1.5M. Another \$700K is estimated for data center metering. This is well documented in the LLNL Multi-Year Sustainability Investment Proposal.

The projected total percentage of site wide usage that can be metered at the individual building level, funding permitting, is as follows:

Natural Gas Metering:

1 October FY14	50% of required gas meters, connected to centralized system
1 October FY15	75% of required gas meters, connected to centralized system
1 October FY16	90% of required gas meters, connected to centralized system

Potable Water Metering: LLNL does not meter potable water at the building level. Our biggest users are the Cooling Towers and Landscape irrigation respectively. The appropriate meters to be centralized are the standard water meters at the cooling towers and the advanced meters at the Irrigation Smart Controllers.

The projected total percentage of site wide usage that can be connected to a centralized system, funding permitting, is as follows:

1 October FY14	50% of Cooling Tower water meters, connected to a centralized system
1 October FY15	50% of Advanced Smart Controller meters, connected to centralized system
1 October FY16	90% of Cooling Tower and Smart Controller meters, connected to a centralized system

Section 2. Site Metering Progress and Plans Towards DOE SSPP Goals

SSPP Metering Stretch Goals	FY 2011 Performance Status	Planned Actions and Key Issues
Install electricity meters on individual buildings or processes at each site so that these individually metered buildings and processes account for at least 90% of the site's consumption by October 1, 2012.	90% by 2012 stretch goal: 90% site percentage was achieved as of the end of FY12.	LLNL has met FY12 stretch goal of 90%. Energy Modernization and Investment Program (EMIP) granted LLNL with \$640k to re-establish communications on existing meters and add new advanced meters on buildings that are part of the 90% largest users.
Install natural gas, steam and chilled water meters on individual buildings or processes so that these individually metered buildings and processes account for at least 90% by October 1, 2015 (90% for each utility).	90% stretch goal: 90% site projected percentage to be achieved as of the end of FY15.	In FY12, LLNL achieved 52% natural gas metering and is continuing work towards meeting the FY15 goal. EMIP funds were utilized on both electric and gas metering in FY12. Steam use is very limited at LLNL, it is not metered and there are no plans to meter it. Chilled water use is captured in the building's energy use. LLNL projects it will meet the stretch goal of 90% by FY15.
Independently meter agency data centers working toward a goal of 100% by October 1, 2015.	100% by 2015: Enter site projected percentage to be achieved as of the end of FY 2015.	Based on new definition of greater than 500 SF and 1 rack, LLNL will not be in compliance by FY 2015. All of the areas that meet the new criteria were surveyed in FY12 and a total of 58 data centers were determined. The next step is to develop a consolidation plan, then develop a metering plan.

Section 3. Site Metering Progress and Plans (by Fiscal Year)

In FY12, LLNL metered 408,030,000 kWh using both advanced meters and standard meters. The ratio of metered data towards the DOE SSPP stretch goal is approximately 90%, meeting the goal.

Electric Metering								
Fiscal Year	Standard meters			Advanced meters			Appropriate Buildings	
	Cumulative Number of Buildings Metered	Cumulative Electricity Metered (KWh)	Cumulative % of Electricity Metered	Cumulative Number of Buildings Metered	Cumulative Electricity Metered (KWh)	Cumulative % of Electricity Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2010 Report				6	179,964,951	51.3%	61	9.8%
2011 Report	17	35,926,393	9.5%	65	253,981,504	76.5%	82	100.0%
2012 Report	7	2,146,924	0.5%	96	363,500,274	89.1%	103	100.0%
2013 Planned								#DIV/0!
2014 Planned								#DIV/0!
2015 Planned								#DIV/0!
FY 2012 Total Site Electricity Consumption (KWh):				408,030,000				
Progress Towards FY12 SSPP Stretch Goal:				90%				

In FY12, LLNL metered 411,429 MCF of natural gas, or approximately 424,183 MM BTUs. The ratio of metered data towards the DOE SSPP stretch goal is approximately 52%. LLNL is on track to meet the DOE SSPP stretch goal of 90% by FY15.

Natural Gas Metering								
Fiscal Year	Standard meters			Advanced meters			Appropriate Buildings	
	Cumulative Number of Buildings Metered	Cumulative Natural Gas Metered (BTU ⁶)	Cumulative % of Natural Gas Metered	Cumulative Number of Buildings Metered	Cumulative Natural Gas Metered (BTU ⁶)	Cumulative % of Natural Gas Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2010 Report				2		11.8%	17	11.8%
2011 Report	15	60,103		10	184,908	54.8%	25	100%
2012 Planned	15	71,395		11	149,294	52.0%	26	100%
2013 Planned								#DIV/0!
2014 Planned								#DIV/0!
2015 Planned								#DIV/0!
FY 2012 Total Natural Gas Consumption (BTU ⁶)				424,183				
Progress Towards FY12 SSPP Stretch Goal:				52%				

LLNL does not use a district-type chilled water system. In a few cases where a chilled water system serves more than one building, submeters are being planned to monitor the system separately so energy use can be more efficiently measured and tracked. In general, a building's energy use of its chilled water system is accounted for in the electricity usage for that building.

Chilled Water Metering - N/A								
	Standard meters			Advanced meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Chilled Water Metered (BTU ⁶)	Cumulative % of Chilled Water Metered	Cumulative Number of Buildings Metered	Cumulative Chilled Water Metered (BTU ⁶)	Cumulative % of Chilled Water Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2010 Report								#DIV/0!
2011 Report								#DIV/0!
2012 Report								#DIV/0!
2013 Planned								#DIV/0!
2014 Planned								#DIV/0!
2015 Planned								#DIV/0!
FY 2012 Total Chilled Water Consumption (BTU ⁶)					N/A			
Progress Towards FY12 SSPP Stretch Goal:					#DIV/0!			

LLNL has very little steam consumption. Steam is not being metered and there are no plans to meter in the future. However, gas consumption at the boilers is metered.

Steam Metering - N/A								
	Standard meters			Advanced meters			Appropriate Buildings	
Fiscal Year	Cumulative Number of Buildings Metered	Cumulative Steam Metered (BTU ⁶)	Cumulative % of Steam Metered	Cumulative Number of Buildings metered	Cumulative Steam Metered (BTU ⁶)	Cumulative % of Steam Metered	Number of Appropriate Buildings for Metering	Cumulative % of Appropriate Buildings Metered
2010 Report								#DIV/0!
2011 Report								#DIV/0!
2012 Report								#DIV/0!
2013 Planned								#DIV/0!
2014 Planned								#DIV/0!
2015 Planned								#DIV/0!
FY 2012 Total Steam Consumption (BTU ⁶)					N/A			
Progress Towards FY12 SSPP Stretch Goal:					#DIV/0!			

Data Centers - Metering

Based on the new definition of data center as being greater than 500 square feet and 1 rack, LLNL has determined that it will not be in compliance by FY 2015. LLNL's plan to survey all of the areas that meet the new data center criteria was completed in FY12. A total of 58 data centers has been determined. LLNL is in the process of developing a plan to consolidate the data centers as much as practicable, and update the metering plan to address metering of the data centers.

Section 4. Evaluation Methodology/Justification for Meter Installations

EPAct-2005 requires that all federal buildings have their electrical usage metered by “advanced meters” to the “maximum extent practicable.”

DOE interprets “maximum extent practicable” as a cost-effective meter installation. Per Federal Energy Management Program (FEMP) Document 2006.10, *DOE Building Electric Metering Guidance*, 27 September 2006, the energy savings achievable from installation of an electric meter represents 2.5% of the metered power consumption. Thus, any building/facility that has the potential to recover electric metering installation costs within a ten-year lifetime is considered to meet this criterion.

Using this criterion as a basis, all LLNL Main Site buildings were evaluated for electric metering cost-effectiveness. Electric metering cost-effectiveness is determined in two ways, by facility area and by recorded electric power use per building.

- Minimum Power Use: The minimum annual electric power use per building is determined, based on 2.5% savings and the present power rate, which will recover meter installation costs within ten years. Result: 650,000 kWh per year.
- Facility Floor Area: The average annual electric power use per facility square foot is determined by dividing total LLNL electric power use by the total square footage of buildings provided with electric power. A minimum “cost-effective” building area is calculated from this average and the minimum annual power use determined above. All buildings meeting this criterion are identified regardless of current metering capability. Minimum building area: 12,000 sf.
- Recorded Electric Power Use Per Building: Electric power use for each building using electric power at the LLNL Main Site is collected and recorded by the MV90 meter collection system. All buildings shown to use more than the minimum cost-effective amount of electric power, from above, are identified regardless of current metering capability.
- Resolution of Conflicts: Where a building is identified as “cost-effective” for a meter installation in only one of the above tests, a reasonable judgment is made as to the reliability of one test as compared to the other. In most cases, recorded annual electric power use was selected.

Existing LLNL Electric Metering

At the start of the Energy Savings Performance Contract (ESPC) Project for ECM3.2, there were 228 electric meters installed at the LLNL Main Site; a single meter serves LLNL Site 300. These numbers include permanent buildings, trailers/modulars, tents, and other structures such as waste accumulation areas, explosives magazines, electrical substations, and other utility structures.

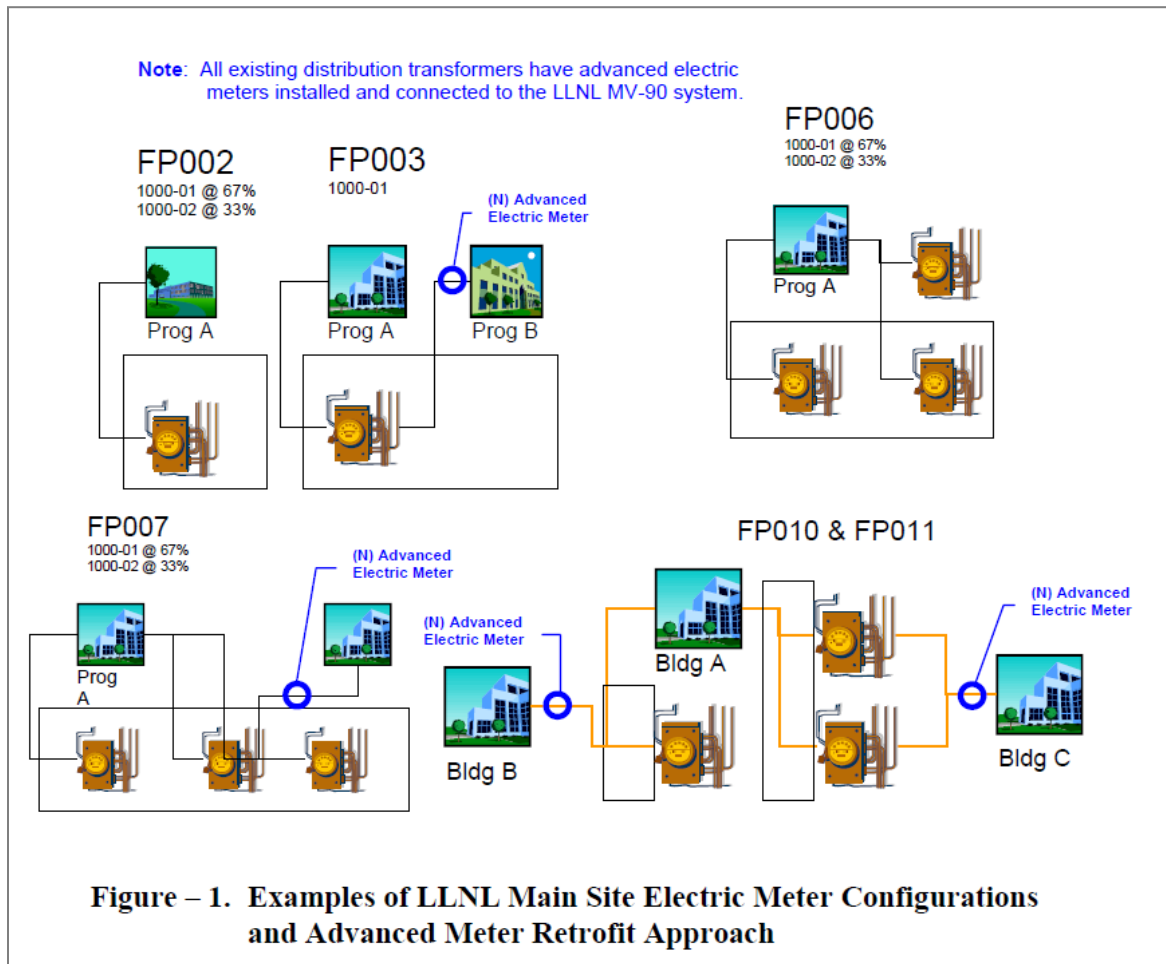
Many large buildings at LLNL already have one or more meters which record their usage. The newer buildings have individual meters. New permanent buildings are equipped with their own dedicated meters.

Many of the existing LLNL Main Site buildings are metered in small “clusters” of buildings fed from a single distribution transformer. In approximately one dozen cases, one building comprises 90 to 99 per cent of the gross square footage of the entire cluster.

Examples of various configurations of existing electric meter installations are illustrated in Figure 1.

Approximately fourteen buildings are served directly by the Pacific Gas and Electric Company (PG&E) and are metered separately by PG&E. The largest of these PG&E accounts is at the MOCHO (water) Pumping Station and is fitted with an advanced-type electric meter. None of the other facilities served directly by PG&E meet the minimum square footage or power consumption criteria for cost-effective meter installations.

Livermore Open Valley Campus (LVOC) facilities will be powered off the LLNL grid, and not PG&E's. Each new building under LVOC is planned to have its own dedicated advanced meter.



Section 5. Metering Implementation Plan

5-1. Prioritization and installation

The methodology for prioritizing buildings for meter application follows EAct 2005 guidelines. First is meeting regulatory EAct 2005 electrical metering requirements. Second is in support of High Performance Sustainability Buildings (HPSB). Third, meters to support other DOE/NNSA metering requirements. Energy Modernization and Investment Program (EMIP) granted LLNL metering funds to assist in the program. The following is a list of the facilities that are metered.

Advanced Electricity Meters - EMIP

Item	Building(s) (FIMS Name)	Property Sequence Number	GSF	EAct 2005 Electrical ("as practicable")	Estimated Electrical Usage	EMIP Funded
1	B453	200806	240,598	Yes	75,757,080	Yes
2	B451	89922	51,398	Yes	26,123,060	Yes
3	B581	140320	693,172	Yes	20,638,011	Yes
4	B391	89855	197,171	Yes	16,675,726	Yes
5	B131	89561	284,206	Yes	11,504,000	Yes
6	OS454	200870	-	Yes	7,067,799	Yes
7	B439	89908	11,783	Yes	6,779,174	Yes
8	B321c	205438	144,840	Yes	7,449,695	Yes
9	B112	203771	45,814	Yes	6,318,923	Yes
10	B298	89767	47,986	Yes	5,060,249	Yes
11	B282	89758	2,160	Yes	108,452	Yes
12	B332	89802	104,787	Yes	4,325,050	Yes
13	B231	89699	142,403	Yes	4,505,454	Yes
14	B361	89821	68,889	Yes	3,316,054	Yes
15	B482	89933	107,941	Yes	2,908,220	Yes
16	B111	89547	112,418	Yes	2,511,899	Yes
17	B121	89553	90,759	Yes	2,300,741	Yes
18	B239	89703	12,517	Yes	1,703,587	Yes
19	B194	89662	41,543	Yes	1,810,768	Yes
20	B253	89711	30,932	Yes	1,050,041	Yes
21	B190	89657	10,086	Yes	1,027,357	Yes
22	B272	89746	9,978	Yes	485,935	Yes
23	T1677	89608	28,789	Yes	566,840	Yes
24	U325	90078	5,072	Yes	10,461,629	Yes
25	B242	201413	20,328	Yes	284,603	Yes
26	B531	89973	12,537	Yes	290,927	Yes
27	B490	89934	216,789	Yes	10,063,113	Yes
28	B334	89803	10,652	Yes	338,899	Yes
29	B132n	127068	251,316	Yes	5,144,654	Yes
30	B264	202401	20,461	Yes	334,056	Yes
31	T4727	89928	9,909	Yes	128,503	Yes
32	B321e	139832	2,581	Yes	115,352	Yes
33	T1727	89625	1,837	Yes	31,070	Yes

Gas Meters – EMIP

Item	Building(s) (FIMS Name)	Property Sequence Number	GSF	EPAct 2005 Electrical ("as practicable")	Estimated Electrical Usage	EMIP Funded
1	B112/B113	89548	45,814	N/A	N/A	YES
2	B142	143756	20,306	N/A	N/A	YES
3	B361	89821	68,889	N/A	N/A	YES
4	B121	89553	90,759	N/A	N/A	YES
5	B181	89640	13,453	N/A	N/A	YES
6	B471	143564	16,086	N/A	N/A	YES
7	OS682	140981	8,880	N/A	N/A	YES

Advanced Electricity Meters - ESPC

Item	Building(s) (FIMS Name)	Property Sequence Number	GSF	EPAct 2005 Electrical ("as practicable")	Estimated Electrical Usage	ESPC Funded
1	B116	89550	7,781	Yes	1,401,942	Yes
2	B118	89552	1,505	Yes	279,267	Yes
3	B131	89561	284,206	Yes	11,504,000	Yes
4	B141	89576	47,342	Yes	1,262,712	Yes
5	B151	89589	96,018	Yes	4,785,646	Yes
6	B155	141490	21,742	Yes	1,083,555	Yes
7	B176	89636	3,973	Yes	1,463,846	Yes
8	B181	89640	13,532	Yes	373,617	Yes
9	B194	89662	41,543	Yes	1,810,768	Yes
10	B211	133205	14,122	Yes	246,373	Yes
11	B216	89676	18,976	Yes	331,217	Yes
12	B271	89744	18,874	Yes	570,714	Yes
13	B274	89747	21,436	Yes	636,812	Yes
14	B282	89758	2,160	Yes	38,282	Yes
15	B313	89770	4,352	Yes	277,967	Yes
16	B314	89771	13,238	Yes	74,949	Yes
17	B319	89782	18,048	Yes	228,146	Yes
18	B323	89792	18,555	Yes	7,557,491	Yes
19	B324	89793	11,290	Yes	171,071	Yes
20	B327	89795	19,100	Yes	414,918	Yes
21	B329	89800	5,150	Yes	227,714	Yes
22	B361	89821	68,889	Yes	3,316,054	Yes
23	B366	89828	2,631	Yes	319,844	Yes
24	B368	202152	1,590	Yes	75,908	Yes
25	B381	89847	95,421	Yes	4,878,650	Yes
26	B383	89849	6,715	Yes	144,908	Yes
27	B391	89855	197,171	Yes	16,675,726	Yes
28	B411	89868	71,625	Yes	366,067	Yes
29	B432	89893	33,575	Yes	676,319	Yes
30	B438	89901	16,262	Yes	218,917	Yes
31	B439	89908	11,783	Yes	6,779,174	Yes
32	B451	89922	51,398	Yes	26,123,060	Yes
33	B452	90062	492	Yes	33,505	Yes
34	B490	89934	216,789	Yes	11,003,404	Yes
35	B493	89942	19,100	Yes	176,517	Yes
36	B571	89985	41,407	Yes	721,354	Yes
37	B611	90016	15,018	Yes	225,821	Yes
38	B694	132382	10,590	Yes	289,249	Yes
39	B695	140676	46,504	Yes	1,531,737	Yes
40	B696	135831	21,381	Yes	119,537	Yes
41	T1727	89625	1,837	Yes	14,153	Yes

42	T1739	89633	5,646	Yes	141,982	Yes
43	T1879	89648	11,118	Yes	102,094	Yes
44	T2580	89728	4,203	Yes	55,977	Yes
45	T6929/T6930	201479	4,925	Yes	141,544	Yes
46	B551E	1020327	40,966	Yes	745,664	Yes
47	B551W	1020328	65,776	Yes	1,009,332	Yes
48	T3726	89836	19,824	Yes	393,998	Yes
49	T4525	89923	5,713	Yes	435,507	Yes
50	T5475	89979	32,368	Yes	751,238	Yes
51	T6925	90043	5,873	Yes	160,609	Yes
52	T6926	89781	2,160	Yes	42,466	Yes
53	U291	90074	8,612	Yes	9,991,385	Yes
54	U325	90078	5,072	Yes	10,461,629	Yes
55	U328C	131775	300	Yes	618,446	Yes

5-2. Staffing/Resources

LLNL received funds for metering under EMIP in the amount of \$640,000.00. The plan is to first re-connect existing meters that are no longer communicating. The meters found to be defective will be replaced with DSL-ethernet capable meters as much as practicable. Where DSL is not feasible due to impractical and/or expensive construction issues, traditional phone lines will be used. In total, EMIP funding installed 55 electricity meters and 7 gas meters.

At project completion, ESPC ECM3.2 installed 79 advanced meters at 55 facilities, 19 of which are replacement of existing meters. The total meters at LLNL (including the existing) will then equal 109 advanced meters at 109 facilities, 138 shared advanced meters at 268 facilities and 49 standard meters at 7 facilities.

5-3. Uses of Metering Data

The existing MV-90 meter collection system was upgraded as part of the ESPC project. An optional software package, Energy Enterprise Management Suite (EEM), was installed. It provides the monthly usage report notices (see Figure 3.1 below) and the actual report when the recipient clicks on the link (see Figure 3.2). In addition, EEM automatically transmits notices via email to LLNL facilities managers (FM) when their buildings experience electric power use anomalies, such as sudden increases and drops in power consumption (see Figure 3.3 below) or a Zero Alert (see Figure 3.4) where no anomalies have been detected. Such notices allow facility staff to investigate and correct and/or explain causes of power use fluctuations. The Energy Management Program will oversee this program to assure that notices are properly provided and that appropriate responses are made.

A program to assure appropriate responses are made is being evaluated. The program includes the following components:

- Train FMs and FPOCs to review metering data on a regular basis.
- For any anomaly, Energy Management Group (EMG) will make voice contact with the respective FM or facility point-of-contact (FPOC) to ensure awareness and to discuss what may be the reason for the anomaly. If anomaly is maintenance related, a work order will be called in for repairs and the building performance will be rechecked.
- Second, a face-to-face meeting and evaluation with the respective FM or FPOC if the anomaly

continues.

- Third, a facility energy audit by the energy management group and the FPOC (funding permitting).

Metering data was used in Benchmarking of buildings on Portfolio Manager as required by Section 432 of EISA 2007. This was completed in FY 2012.

LLNL does not currently bill the users, however, the monthly usage report email notice is automatically sent out to the FMs and FPOCs. This electronic notice takes the place of the traditional paper monthly usage bill.

LLNL's O&B finance department reviews the monthly utility bills from WAPA, PG&E and the water suppliers along with the metered data to verify accuracy. Energy Management group participates in this review and provides the metered data and analysis.

LLNL does not have a '*time of use or demand response*' charge with the main supplier WAPA, however, in keeping with Best Management Practice, off-peak use is always considered with non-critical programs. With PG&E, the local supplier, off-peak electricity use is the norm. An example is the Mocho Pumping Station where the supply pumps are programmed to turn on during off-peak hours to fill the water tanks, subject to a manual over-ride should an emergency require it.

Metered electric data is also used, to the maximum extent feasible, to measure and verify the energy savings achieved from ESPC ECM3.1, installation and upgrading of building automation controls in 23 of the largest LLNL Main Site buildings. In addition, the metered electric data is also being used to verify the savings achieved from implementing the recommended energy conservation projects resulting from the previous EISA Facility Audits.

Additional uses of the metered data will be explored in the future. For example, development of building HVAC system diagnostics may be possible with meters connected to the MV-90 system via Open Lab-Net due to greater communication speeds available over the present telephone modem communications. Annual Energy audits to meet EISA Section 432 and efforts to increase efficiency (e.g. combining energy audits with condition assessment surveys) along with re-commissioning/retro-commissioning are constantly being evaluated (subject to funding) and will use metering data to monitor and fine tune building HVAC systems.

The F&I Directorate is responsible for gathering, analyzing and using the metered data to the maximum extent practicable. Usage data and energy intensity information can be sent to different groups within LLNL.

The EEM system is currently monitored by the Building Environmental Specialist (BES) with LLNL oversight, however when the BES departs after one year, the Energy Management Group will take over this important task.

The Metering System will continue to be operated and maintained by LLNL. Work orders will be cut for the Electric Utilities Group to maintain and fix the meters in the MV90 system, IT personnel will assist in maintaining the software in conjunction with the MV90 and EEM vendors. The Energy Management

Group under the Sustainability Manager will operate and monitor the systems on a daily basis and see to it that all systems are working as designed.

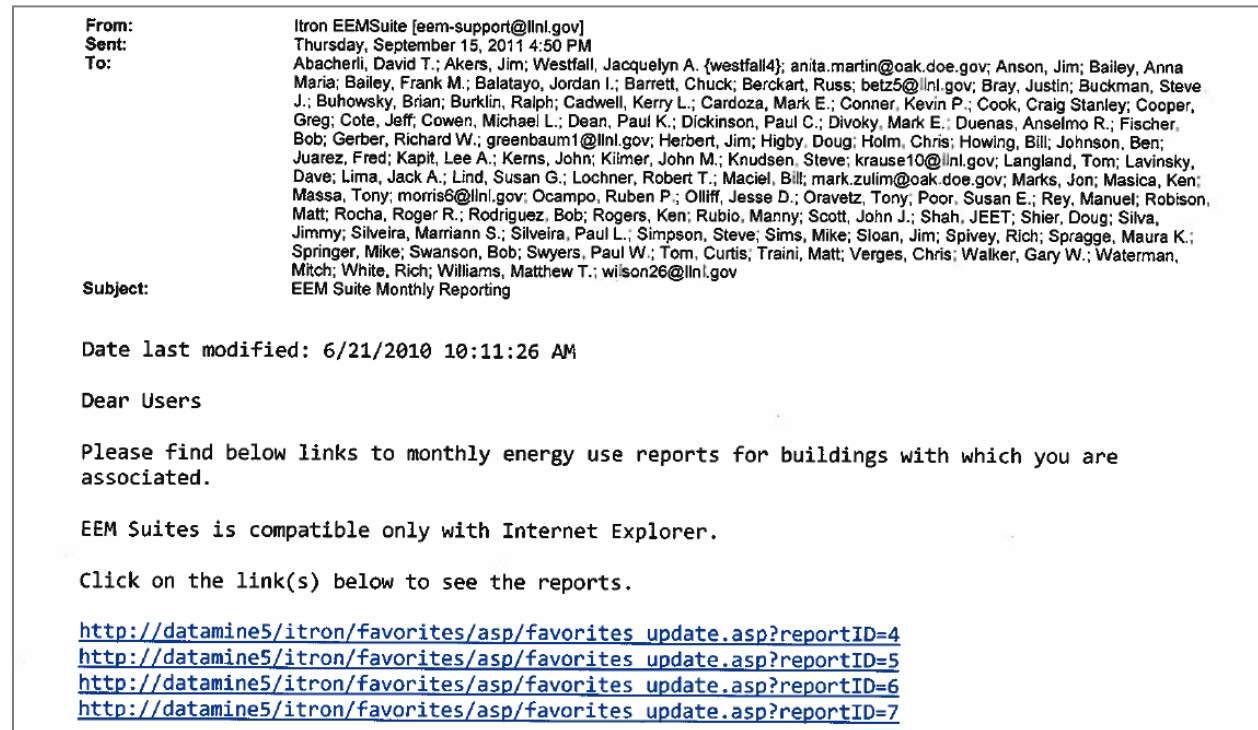


Figure 3.1. Monthly use report email notice.

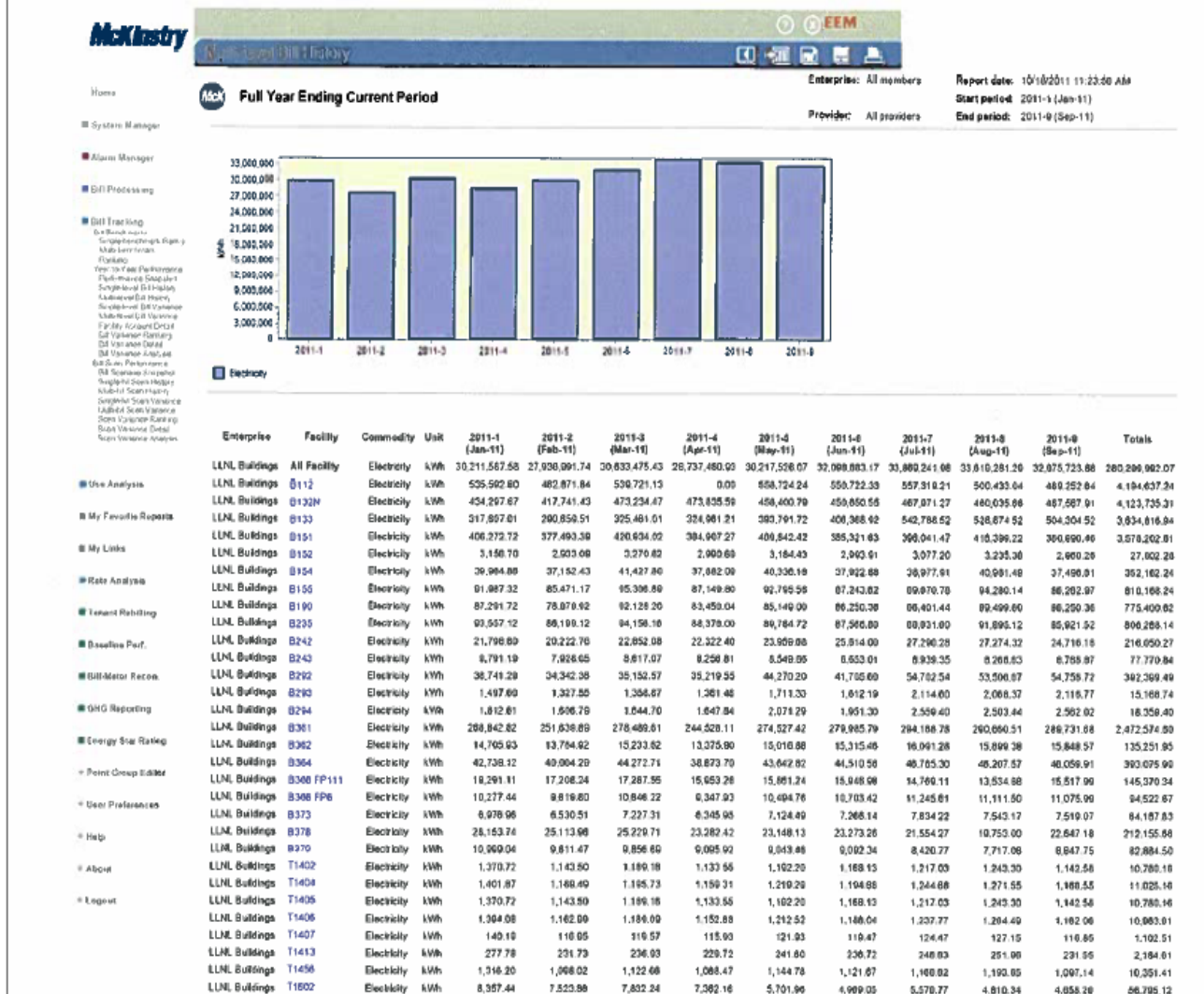


Figure 3.2 Sample usage report.

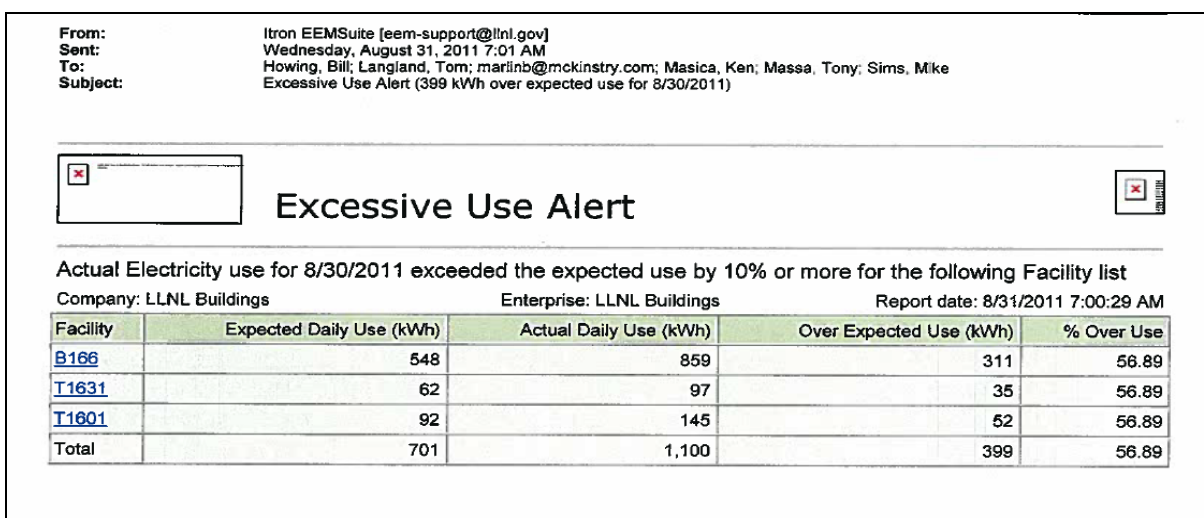


Figure 3.3. Email alert message indicating buildings that are reporting high usage above a pre-determined set point.

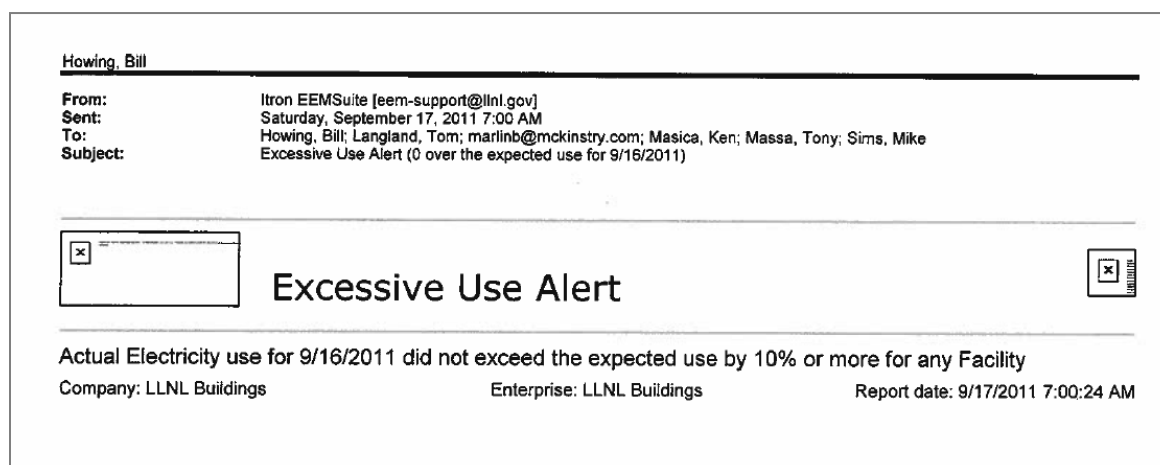


Figure 3.4. Email alert message indicating no buildings exceeded the pre-determined set point.

5-4. Metering Gap Analyses

LLNL has met the statutory metering requirements of EAct 2005 and EISA 2007 and DOE 2011 SSPP goals. No corrective actions are deemed appropriate at this time. In the event that conditions drastically change, it is LLNL's full intention to take positive steps to take corrective action.

Section 6. Performance Validation

The installation of meters by itself is considered 'revenue neutral'; however, the data collected can be used in various ways to alter and improve old, wasteful habits, and flawed perceptions. It is a convincing tool when one can actually see the change in use after implementing certain measures such as turning off unneeded lighting or turning off the AC unit during unoccupied hours.

LLNL will use the monthly reporting tool to compare the before-and-after energy use of the metered facilities. EEM has a 3D chart tool (see Figure 6.1 and Figure 6.2 below) that graphically compares a facility's use for different time periods. Figure 6.1 shows the peaks and valleys attributed to nights and weekends that were not apparent in the Figure 6.2 chart. In Figure 6.2, the load was not being shed on nights and weekends due to lack of efficient HVAC controls.

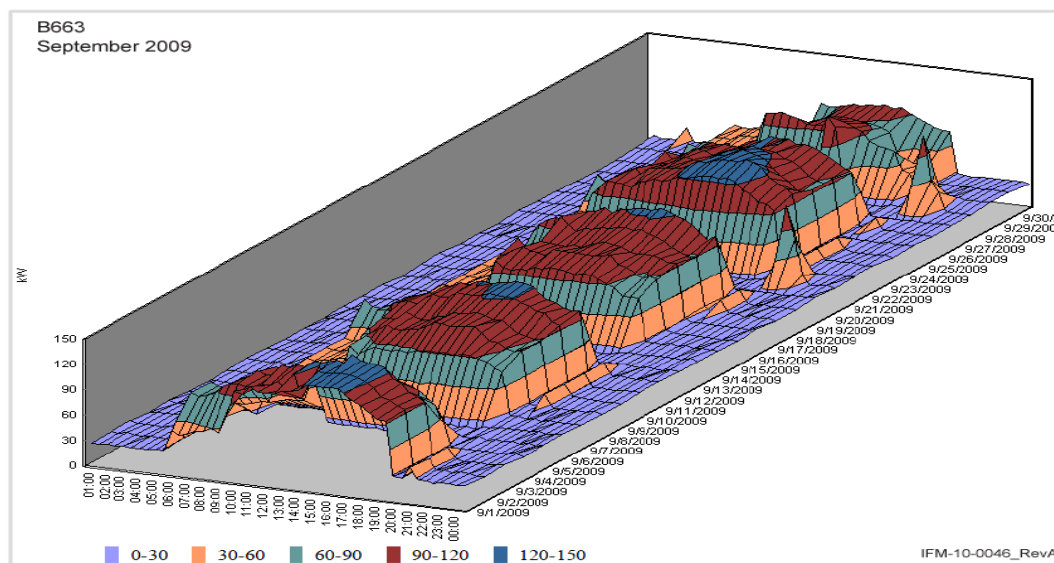


Figure 6.1: B663 energy use in September 2009.

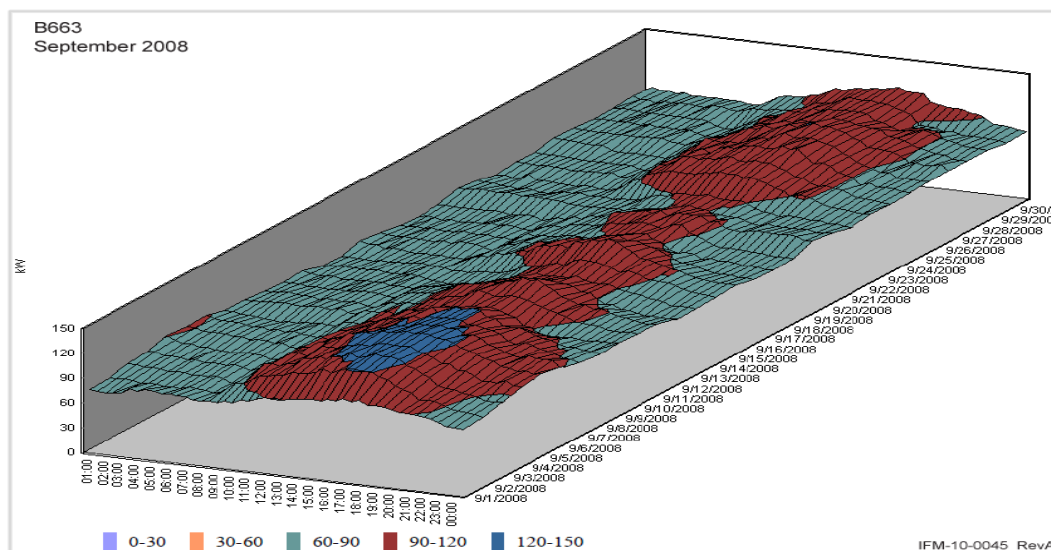


Figure 6.2: B663 energy use in September 2008.

NNSA FY 2013 Site Metering Plan Spreadsheet (Building-by-Building)

A	B	C	D	E	ELECTRICAL					NATURAL GAS					WATER				DATA CENTER			
					F	G	H	I	J	P	Q	R	S	T	Y	Z	AA	AB	AC	AD	AE	AF
Site	Building (FIMS Name)	Property Sequence Number	GSF	HPSB	Meter Type and Status	Estimated Annual Energy Usage (KWh) FY12	Fiscal Year to Install 201x	Cost (Dollars)	EPAct	Meter Type and Status	Estimated Annual Energy Usage (Btu ⁶)	Fiscal Year to Install 201x	Cost (Dollars)	EISA	Meter Type and Status	Estimated Annual Water Usage (000s Gallons)	Fiscal Year to Install	Cost (Dollars)	Data Center Building	Data Center Metered	FY to Complete Metering	Cost (Dollars)
LLNL	41	89542	25,555		5 Advanced Installed	257,680			YES													
LLNL	71	89544	4,166		5 Advanced Installed	131,084			NO						5 Advanced	927						
LLNL	111	89547	112,418		5 Advanced Installed	1,927,660		\$ 9,700	YES	Installed	20,926								NO	NO		
LLNL	112	213771	45,512	1 Yes	5 Advanced Installed	5,867,704		\$ 38,800	YES	4 Standard		2013	\$ 15,285	YES					YES	YES		
LLNL	113	89548	44,426		5 Advanced Installed	963,884			YES	Installed	17,670			YES								
LLNL	115	89549	17,140		5 Advanced Installed	1,234,398			YES										YES	NO		
LLNL	116	89550	7,781		5 Advanced Installed	175,898			NO													
LLNL	117	89551	11,370		5 Advanced Installed	3,664,204			YES										YES	NO		
LLNL	118	89552	1,505		5 Advanced Installed	78,528			NO													
LLNL	121	89553	90,759		5 Advanced Installed	2,180,502		\$ 9,700	YES	3 No Meter	12,000	2013	\$ 15,285	YES	Installed	508		\$ 17,000	YES	NO		
LLNL	131	89561	285,308		5 Advanced Installed	11,306,992		\$ 9,700	YES	Installed	22,834			YES					YES	NO		
LLNL	133	89563	5,631		5 Advanced Installed	4,405,683			YES	Installed	51,931				Installed	6,896						
LLNL	140	143668	66,660		5 Advanced Installed	2,029,333			YES										YES	NO		
LLNL	141	89576	47,342		5 Advanced Installed	1,560,669			YES													
LLNL	142	143756	20,306		5 Advanced Installed	296,863			NO	Installed	262		\$ 15,285	YES								
LLNL	151	89589	96,018		Advanced	4,794,318			NO	Installed	30,867			YES								
LLNL	153	89593	25,967		5 Advanced Installed	2,821,055			YES	Installed	7,929			YES								
LLNL	154	89594	9,504		Advanced	471,880			NO													
LLNL	155	141490	21,742		5 Advanced Installed	771,221			YES													
LLNL	161	89599	6,105		4 Standard Installed	265,389			NO													
LLNL	162	89600	19,197		Advanced	603,126			NO													
LLNL	170	125923	43,760		5 Advanced Installed	1,359,131			YES	Installed	3,587				Installed	2,663			YES	NO		
LLNL	174	89634	19,332		5 Advanced Installed	536,903			NO													
LLNL	176	89636	3,958		5 Advanced Installed	723,741			NO													
LLNL	181	89640	13,532		5 Advanced Installed	395,132			YES	Future Advanced	1,676	2013	\$ 15,285	YES								
LLNL	190	89657	10,252		5 Advanced Installed	888,960		\$ 9,700	YES													
LLNL	191	89658	121,028		5 Advanced Installed	2,425,977			YES	Installed	14,576								YES	NO		
LLNL	194	89662	41,543		5 Advanced Installed	1,607,101		\$ 9,700	YES	Installed	4,160			YES								
LLNL	197	89666	10,716		5 Advanced Installed	191,785			NO													
LLNL	211	133205	3,770		5 Advanced Installed	180,267			YES						Installed	376						
LLNL	216	89676	18,982		5 Advanced Installed	464,394			YES										YES	NO		
LLNL	231	89699	142,403		5 Advanced Installed	4,522,619		\$ 19,400	YES													
LLNL	235	89702	88,175		5 Advanced Installed	1,045,065			YES													
LLNL	239	89703	12,904		5 Advanced Installed	637,477		\$ 9,700	YES													
LLNL	242	201413	20,328		5 Advanced Installed	239,294		\$ 9,700	NO	Installed	354											
LLNL	243	89711	20,000		4 Standard Installed	111,844			NO													
LLNL	253	89722	30,932		5 Advanced Installed	793,570		\$ 9,700	YES													
LLNL	255	89725	21,855		Advanced	253,111			NO						Installed	50						
LLNL	256	89727	5,937		5 Advanced Installed	1,079,665			YES										YES	NO		
LLNL	264	202401	20,461		5 Advanced Installed	246,638		\$ 9,700	NO	Installed	280											
LLNL	271	89744	18,874		Advanced	697,665			NO													
LLNL	272	89746	10,124		5 Advanced Installed	383,851		\$ 9,700	YES													
LLNL	274	89747	21,436		5 Advanced Installed	614,216			NO													
LLNL	282	89758	2,160		5 Advanced Installed	108,452		\$ 9,700	YES													
LLNL	298	89767	47,986		5 Advanced Installed	5,200,003		\$ 9,700	YES													
LLNL	311	89768	40,951		5 Advanced Installed	546,531			YES	Installed	1,833			NO								
LLNL	312	89769	11,482		5 Advanced Installed	27,011			NO													
LLNL	314	89771	13,238		5 Advanced Installed	77,475			NO													
LLNL	319	89782	18,048		5 Advanced Installed	211,524			NO													

A	B	C	D	E	ELECTRICAL					NATURAL GAS					WATER				DATA CENTER			
					F	G	H	I	J	P	Q	R	S	T	Y	Z	AA	AB	AC	AD	AE	AF
Site	Building (FIMS Name)	Property Sequence Number	GSF	HPSB	Meter Type and Status	Estimated Annual Energy Usage (KWh) FY12	Fiscal Year to Install 201x	Cost (Dollars)	EPAC	Meter Type and Status	Estimated Annual Energy Usage (Btu ⁶)	Fiscal Year to Install 201x	Cost (Dollars)	EISA	Meter Type and Status	Estimated Annual Water Usage (000s Gallons)	Fiscal Year to Install	Cost (Dollars)	Data Center Building	Data Center Metered	FY to Complete Metering	Cost (Dollars)
LLNL	323	89792	18,555		5 Advanced Installed	199,953			NO													
LLNL	324	89793	11,244		5 Advanced Installed	225,904			NO													
LLNL	327	89795	19,100		5 Advanced Installed	409,855			NO													
LLNL	329	89800	5,150		5 Advanced Installed	211,107			YES													
LLNL	331	89801	30,484		4 Standard Installed	1,132,344			YES	Installed	4,304			YES								
LLNL	332	89802	104,787		5 Advanced Installed	4,161,470		\$ 9,700	YES													
LLNL	334	89803	10,652		5 Advanced Installed	686,699		\$ 9,700	YES													
LLNL	341	89808	44,184		Advanced	119,605			NO													
LLNL	361	89821	68,889		5 Advanced Installed	3,113,418		\$ 9,700	YES	Installed	261	2013	\$ 15,285	YES								
LLNL	365	89827	8,825		Advanced	400,900			NO	Installed	1,871											
LLNL	381	89847	95,421		5 Advanced Installed	5,270,327			YES	Installed	20,383			YES								
LLNL	383	89849	6,715		5 Advanced Installed	135,181			YES													
LLNL	391	89855	197,841		5 Advanced Installed	13,264,603		\$ 29,100	YES													
LLNL	392	89856	8,413		5 Advanced Installed	887,998			YES													
LLNL	404	89861	6,460		4 Standard Installed	154,779			NO													
LLNL	411	89868	71,625		5 Advanced Installed	392,128			NO													
LLNL	415	89874	19,297		4 Standard Installed	164,897			NO													
LLNL	432	89893	33,575		5 Advanced Installed	888,423			YES													
LLNL	439	89908	12,055	1 Yes	5 Advanced Installed	7,582,427		\$ 19,400	YES										YES	NO	FY13	
LLNL	451	89922	51,398	1 Yes	5 Advanced Installed	26,708,996		\$ 19,400	YES	Installed	1,622	2013			Installed	70		\$ 17,000	Yes	Yes		
LLNL	453	200806	240,598	1 Yes	5 Advanced Installed	116,226,770		\$ 126,100	YES	Installed	10,813	2013			Installed	1,328			Yes	Yes		
LLNL	471	143564	16,086		5 Advanced Installed	441,289			NO	Installed	1,532	2013	\$ 15,285	YES								
LLNL	481	89932	61,165		5 Advanced Installed	741,869			NO													
LLNL	482	89933	108,000		5 Advanced Installed	2,222,956		\$ 19,400	YES													
LLNL	490	89934	216,789		5 Advanced Installed	10,063,113		\$ 9,700	YES	Installed	7,338	2013							YES	NO		
LLNL	491	89937	13,259		4 Standard Installed	315,646			NO													
LLNL	492	89938	9,550		5 Advanced Installed	635,529			NO													
LLNL	493	89942	19,100		Advanced	215,620			NO	Installed	669	2013										
LLNL	494	89943	29,961		5 Advanced Installed	1,575			NO	Future Advanced	1,000	2013										
LLNL	511	1000284	77,078		Advanced	819,931			NO										YES	NO		
LLNL	531	89973	12,381		5 Advanced Installed	288,294		\$ 9,700	YES													
LLNL	543	89978	78,261		5 Advanced Installed	1,677,643			YES						Installed	4,903			YES	NO		
LLNL	571	89985	41,407		5 Advanced Installed	609,007			YES													
LLNL	581	140320	696,968	1 Yes	5 Advanced Installed	25,323,693		\$ 9,700	YES										YES	NO		
LLNL	583	203637	21,793		Advanced	374,878			NO													
LLNL	651	90035	2,381		5 Advanced Installed	257,760			NO													
LLNL	663	90040	24,786		5 Advanced Installed	318,905			NO	Installed	1,426				Installed	648		\$ 17,000				
LLNL	671	90041	41,476		5 Advanced Installed	730,791			YES													
LLNL	695	140676	46,504		5 Advanced Installed	1,738,968			YES	Installed	12,103											
LLNL	1677	89608	28,576		5 Advanced Installed	394,536		\$ 9,700	YES													
LLNL	1727	89625	1,837		5 Advanced Installed	31,070		\$ 9,700	YES													
LLNL	1739	89633	5,646		5 Advanced Installed	146,691			NO													
LLNL	2580	1000333	4,253		Advanced	42,608			NO										YES	NO		
LLNL	2632	1000438	2,817		Advanced	14,772			NO										YES	NO		
LLNL	3180	89778	4,371		5 Advanced Installed	1,431			NO													
LLNL	3649	1020396	4,800		Advanced	117,697			NO										YES	NO		
LLNL	3724	89834	19,810		4 Standard Installed	430,495			YES													
LLNL	3725	89835	19,867		5 Advanced Installed	289,317			YES													
LLNL	3726	89836	19,824		5 Advanced Installed	340,376			YES													
LLNL	4377	1000259	4,920		Advanced	48,324			NO										YES	NO		
LLNL	4406	1000268	1,560		Advanced	8,889			NO										YES	NO		
LLNL	4725	1000413	9,389		Advanced	247,459			NO										YES	NO		

A	B	C	D	E	ELECTRICAL					NATURAL GAS					WATER				DATA CENTER				
					F	G	H	I	J	P	Q	R	S	T	Y	Z	AA	AB	AC	AD	AE	AF	
Site	Building (FIMS Name)	Property Sequence Number	GSF	HPSB	Meter Type and Status	Estimated Annual Energy Usage (KWh) FY12	Fiscal Year to Install 201x	Cost (Dollars)	EPAct	Meter Type and Status	Estimated Annual Energy Usage (Btu ⁶)	Fiscal Year to Install 201x	Cost (Dollars)	EISA	Meter Type and Status	Estimated Annual Water Usage (000s Gallons)	Fiscal Year to Install	Cost (Dollars)	Data Center Building	Data Center Metered	FY to Complete Metering	Cost (Dollars)	
LLNL	4727	89928	9,891		5 Advanced Installed	99,675		\$ 9,700	YES														
LLNL	4729	89930	10,018		5 Advanced Installed	100,049			YES														
LLNL	5475	89979	32,368		5 Advanced Installed	634,362			YES														
LLNL	6325	90032	4,320		5 Advanced Installed	6,075			NO														
LLNL	6475	209507	12,070	1 Yes	5 Advanced Installed	260,933			YES														
LLNL	6925	90043	5,873		Advanced	137,591			NO														
LLNL	132N	127068	251,316		5 Advanced Installed	5,144,654		\$ 9,700	YES	Installed	17												
LLNL	132S	89562	219,385		5 Advanced Installed	4,033,807			YES						Installed	1,005		\$ 34,000	YES	NO			
LLNL	321C	205438	78,335		5 Advanced Installed	6,672,351		\$ 9,700	YES										YES	NO			
LLNL	321E	139832	2,581		5 Advanced Installed	115,352		\$ 9,700	NO	Future Advanced	27,589	2013											
LLNL	551E	130291	40,966		5 Advanced Installed	745,664			NO														
LLNL	551W	130292	65,776		5 Advanced Installed	1,009,332			YES	Installed	3,653								YES	NO			
LLNL	OS454	200870	3,375		5 Advanced Installed	20,761,594		\$ 19,400	YES						Installed	36,363							
LLNL	OS682	140981	8,880		5 Advanced Installed	265,838			YES	Installed	2,071	2013	\$ 15,285	YES									
LLNL	OS683	140860	2,104		5 Advanced Installed	62,572			YES						Installed	10,595							
LLNL	PTU-10		350		5 Advanced Installed	33,463			NO						Installed	1,500							
LLNL	U291	90074	8,612		5 Advanced Installed	9,471,877			YES						Installed	16,763							
LLNL	U299	133600	675		5 Advanced Installed	42,437			NO														
LLNL	U325	90078	5,072		5 Advanced Installed	18,152,345		\$ 9,700	YES						Installed	27,749							
LLNL	U328C	131775	300		Advanced	798,798			NO														
LLNL	U415	89874	19,297		5 Advanced Installed	164,897			NO														
LLNL	U418	89878	12,414		Advanced	132,013			NO	Future Advanced	10,000	2013											
LLNL	U6042	136630	354		5 Advanced Installed	1,232,179			YES														
								\$ 533,500						297,537					112,344				
								55						60,103									
								33 bldgs						Total Std 15 bldg 7 bldgs									
														\$ 106,995									
																			\$ 85,000				

Columns for "Meter Type and Status" and "EISA / EPACT" have a dropdown picklist for answer choices which are shown above in rows 12 -17.